

WESTERN EDITION

FEBRUARY • 1958

American Fruit Grower



Your SPRAY Issue

- Keeping Ahead of the Insect Problem
- The 1958 Campaign Against Diseases
- How Bill Duffield Grows Fancy Macs
- Report on Four New Insecticides

Culls Are No Problem with the Right Spray Program



Firestone representative, Jack Wiser (right) of L. A. Courtemanche Co., McMinnville, works closely with U. S. Alderman.

Here Mr. Alderman talks tires with Alderman Farms Purchasing Agent, Edward S. Clow (on tractor).

"Tractors, trucks, trailers and cars... IT'S FIRESTONES FOR US ACROSS THE BOARD"

... says U. S. Alderman, Alderman Farms, Dayton, Oregon

"Take a look at any of our vehicles and you'll see we're Firestone 100%. On our tractors, Firestones give us the traction and flotation our job calls for, *plus* longer wear. And with Firestones on our trucks and truck trailers, we've practically eliminated tire troubles!"

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U. S. Alderman is one of Oregon's prominent and success-

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Firestone

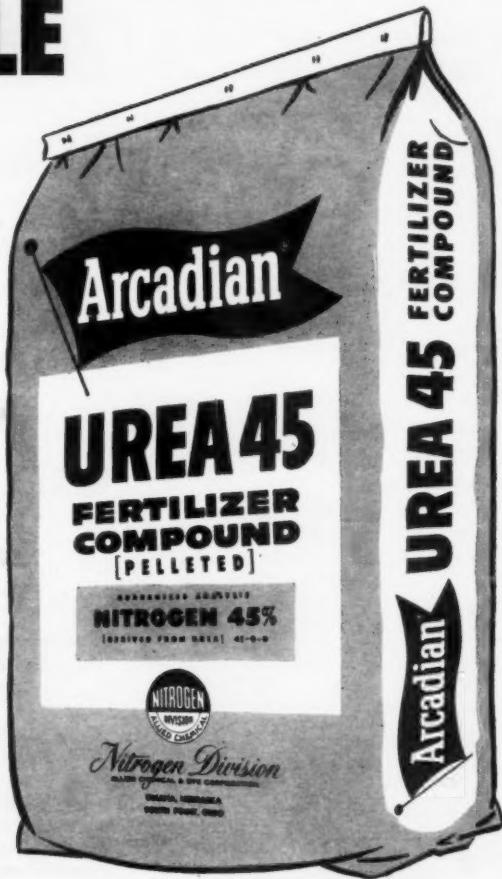
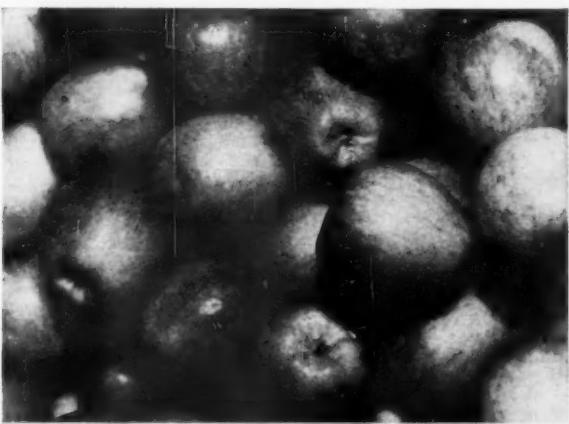
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American
Fruit Grower

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tube-type 6-ply rating, plus tax and recappable tire. Other sizes—(including tubeless in 15" and 16" sizes) attractively low-priced and on EASY BUDGET TERMS at most Goodyear dealers'. Prices subject to change.



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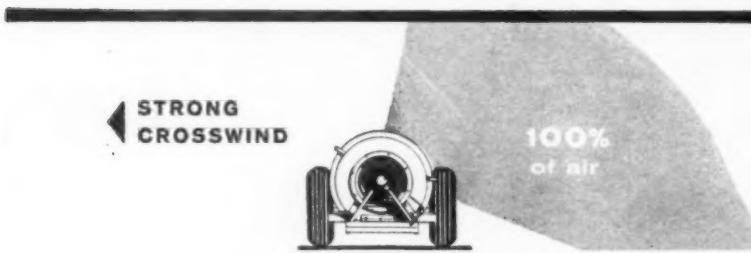
MYERS...THE ONLY AIR SPRAYER with 3-way air control



Ideal spraying conditions: Myers air outlet covers adjusted to direct the air volume equally to both sides.



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See the Myers in action with your own eyes under extreme wind conditions. Arrange a demonstration in your own orchard. Contact your nearest Myers sprayer dealer today.

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C. L. BURKHOLDER

1892-1957

A FRIEND has passed on; a true friend of all that was good. He was a devoted man who loved the fruit industry and the people in it as he loved his family and the great outdoors.



"Burk"

Born on a small diversified fruit farm in Clyde, Ohio, in 1892, he spent his life in the world of fruit growing.

His public services began with the Ohio extension services while still a student at Ohio State University, and continued after his graduation in 1915. He joined the Purdue University staff in 1917, spending the next 10 years visiting by train, wagon, and on foot nearly every

Prof. C. L. Burkholder, aged 65, assistant chief of horticulture at Purdue University, Lafayette, Ind., and well known to midwestern fruit growers, died suddenly in December of a heart attack, at Sturgis, Ky., where he had stopped for the night. Prof. Burkholder was en route home from a quail hunting trip to Mississippi.

orchard in the state of Indiana. In this manner he gained a knowledge of the problems of the industry as few men of his time.

Problems with codling moth control resulted in his transferring to the research staff of Purdue experiment station in 1927, where he rose to become assistant chief in the department of horticulture. His research was practical research; a search for information of direct benefit to the fruit industry. It encompassed all phases of fruit growing, from packaging to pruning. His spray trials to control insects and diseases were well recognized, as was his later work with blossom thinning materials.

His quest for better varieties was stimulated by his father who managed the small family farm as a testing grounds. After his father's death, "Burk," as he preferred to be called by his friends, continued this testing of new varieties and ideas.

This outwardly stern and dignified descendant of the Pennsylvania Dutch had a side little known to most people. All of his acquaintances were to him personal friends in whom he developed personal interest. He worked tirelessly for them, sharing almost beyond belief, his time, energy, and finances.

He is a man who will be missed. His parting is a loss, but his way of life should be a challenge to all who knew him.

LETTERS TO THE EDITOR

2,4-D Injury to Grapes

Dear Editor:

At the moment it appears that we will have a lawsuit here over the use of 2,4-D near a vineyard, and the damage to the vineyard resulting therefrom. In this case, a field of milo was sprayed by plane. The milo field was not, I believe, over one-fourth mile to the southwest of the vineyard, and the plane made his turns over the vineyard. 2,4-D injury was apparent on all new growth.

I am interested in the long-range effects of 2,4-D on grapes in that the owner of the vineyard mentioned above told me this was the fourth year in a row that the vineyard had shown considerable injury. Most of the vines were severely stunted. Actually, they should have made much more growth than they did before the 2,4-D was applied in 1957, which leads me to believe that the injury was not entirely due to this year's 2,4-D application.

In our own experimental vineyard, we have noted some injury every year (vineyard started in 1949). Such injury is more severe on some varieties. In general, the French-American hybrids have shown no 2,4-D injury. For several seasons, some of our less vigorous varieties (Sheridan, Caco, Campbell Early, etc.) have suffered rather severe defoliation during August. The leaves turn almost black and fall off, and the fruit does not mature properly. I have been inclined to blame this on our droughty weather, but now I am wondering if this defoliation doesn't have something to do with 2,4-D injury.

If you receive any further information on this, I would appreciate your passing it along to me.

Wathena, Kans.

Erwin Abmeyer

Northeast Experiment Fields

We are sending a resume of Michigan experience with 2,4-D damage contributed by Paul Larsen, of Michigan State University, plus a report on action taken in California barring the use of 2,4-D in certain areas near vineyards.—Ed.

More on Lime Sulfur

Dear Editor:

Concerning the discussion on the use of lime sulfur for rodent control, I tried it on a little orchard of 150 trees of apple, peach, and prune that I set out in the spring of 1954. I took the liquid commercial lime sulfur just as it comes and applied it with a rag swab, wetting the trunks from the ground to a little above the branching point. I had no mice trouble and no apparent damage from the lime sulfur.

I appreciate your paper and as a boy I enjoyed its predecessor, *Green's Fruit Grower*. C. A. Green was a fine man. I used to read and reread his little book, *How We Made the Old Farm Pay*. Imlay City, Mich.

F. E. Parish

Tough One to Answer

Dear Editor:

I think one of the greatest problems we face today in the tree fruit business in the Central West is the difficulty of our young men being able to establish orchards of their own. After all, it takes young trees and young men to keep our industry healthy. What's the answer to the young man's problem?

Lafayette, Ind.

C. L. Burkholder

FEBRUARY, 1958

Attention! APPLE GROWERS

AS SURE AS SPRING—THERE WILL BE MILLIONS OF
APPLE SCAB SPORES IN YOUR ORCHARDS THIS SEASON.

Kill Them with **Phix**, Before They Eat Your Profits Away



THROUGHOUT THE APPLE GROWING STATES, PHIX has been proven and recommended by Experiment Station scientists, and is the CHOICE of thousands of successful commercial apple growers.

WHY? BECAUSE ONLY PHIX HAS ALL THESE ADVANTAGES:

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- Makes spraying effectiveness more certain by mixing instantly with water.
- Protects your trees.
- Mild action, greatest margin of safety, and widest range of compatibility.

NOW AVAILABLE IN BOTH THE REGULAR 1 LB. CAN, AND IN A NEW 1 1/4 LB. CAN CUSTOM DESIGNED FOR 500 GAL. SPRAYERS TO ELIMINATE ALL MEASURING.

Order PHIX from your dealer early. Insist on PHIX—GET THE MOST FOR YOUR MONEY. REMEMBER—IT PAYS MORE WAYS, WHEN YOU USE PHIX. If your dealer does not have it, write, wire or phone your order to us with your supplier's name.

Attention! STRAWBERRY GROWERS

LEAF BLIGHT AND STEM-END FRUIT ROT DISEASES
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ON SUSCEPTIBLE VARIETIES.

AN EARLY SPRAY WITH PHIX IS THE MOST IMPORTANT AND MOST EFFECTIVE SINGLE CONTROL MEASURE AVAILABLE FOR KILLING THESE DISEASE ORGANISMS — PROVED IN EXPERIMENT STATION TESTS ASK YOUR DEALER FOR PHIX.

Free leaflet available describing
these diseases

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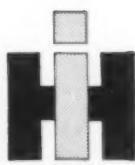
TORQUE AMPLIFIER...

**Indispensable for orchard work,
reports International® 350 Utility owner**

"With Torque Amplifier and power steering there's nothing that can come even close to my International 350 Utility Diesel for fast, easy orchard tillage and spraying," says Mr. H. G. Popwell who grows peaches on 135 acres near Clanton, Alabama. (Photo, right). Wherever you go, 350 Utility owners echo Mr. Popwell's enthusiasm. Here's why:

Increase pull-power, change speed on the go! When you turn at ends of the rows or come to a soft spot, you don't have to shift gears. Just pull the TA lever! Instantly, without stopping, you get up to 45 per cent more pull-power while automatically reducing speed. To resume full-gear speed, just push the TA lever forward. You work non-stop, do more acres of quality tillage per day!

Try TA for yourself . . . either in the 45 hp International 350 Utility, or the new, lower-cost 35 hp International 330 Utility. See your IH Dealer today for a free demonstration . . . Ask about the liberal IH Income Purchase Plan.



SEE YOUR
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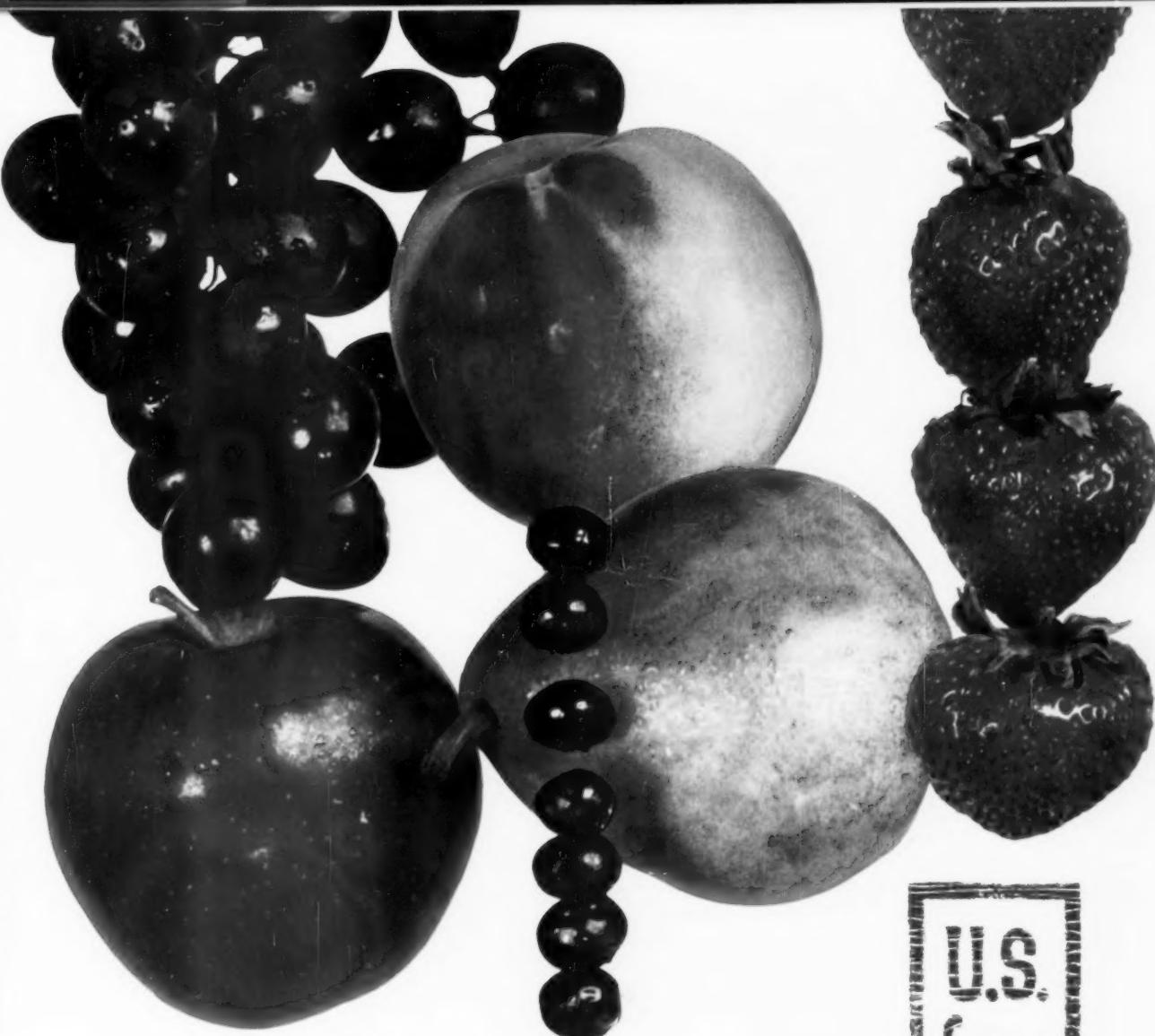
International Harvester Products pay for themselves in use—Farm Tractors and Equipment . . . Twinne . . . Commercial Wheel Tractors . . . Motor Trucks . . . Construction Equipment—General Office, Chicago 1, Illinois



You get 10 speeds forward with Torque Amplifier, from a low-low of 1.8 to 16.7 mph. Above, Mr. Popwell is pulling heavy sprayer in TA-3rd.



All-job utility! Easily attached front-mounted fork lift and rear-mounted Fast-Hitch forks let you handle big loads of crated fruit, even on soft footing.



Here's how you can grow more...  ...

Pack new color, new firmness, new quality into your fruit. Grow for U.S. Fancy grade with mixed fertilizer containing **K-plus** sulphate of potash. Fruit trees pack in extra nutrients with the help of **K-plus** sulphate of potash. Where other forms of potash add chloride, **K-plus** supplies sulphate plant food. Excessive chloride adds water to fruit and may inhibit nutrient uptake, while sulphur or sulphate is essential for plant growth. That's why **K-plus**—the quality sulphate form of potash—helps you grow high yields of quality fruit. With **K-plus**, you can expect more trees to respond with yields of the flavor, color, and size that grade U.S. Fancy. Trees can be healthy, fruit more firm. Fruit can hold quality better during storage and shipping. Ask your dealer for mixed fertilizer with **K-plus** sulphate of potash.



see how K-plus goes to work for you 

*TRADE MARK—I. M. C. BRAND OF SULPHATE OF POTASH

HERE'S HOW



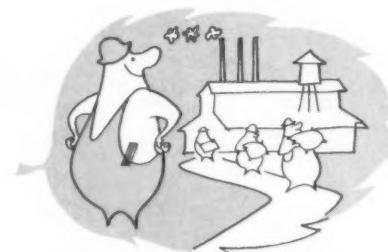
BUILDS HIGH QUALITY FRUIT



Like a good foreman on any building job, K-plus potash supervises other nutrient elements . . . performs the function of a catalyst.



This results in a nutrient production team fully equipped to grow quality fruit for top market prices—without excess chloride damage.



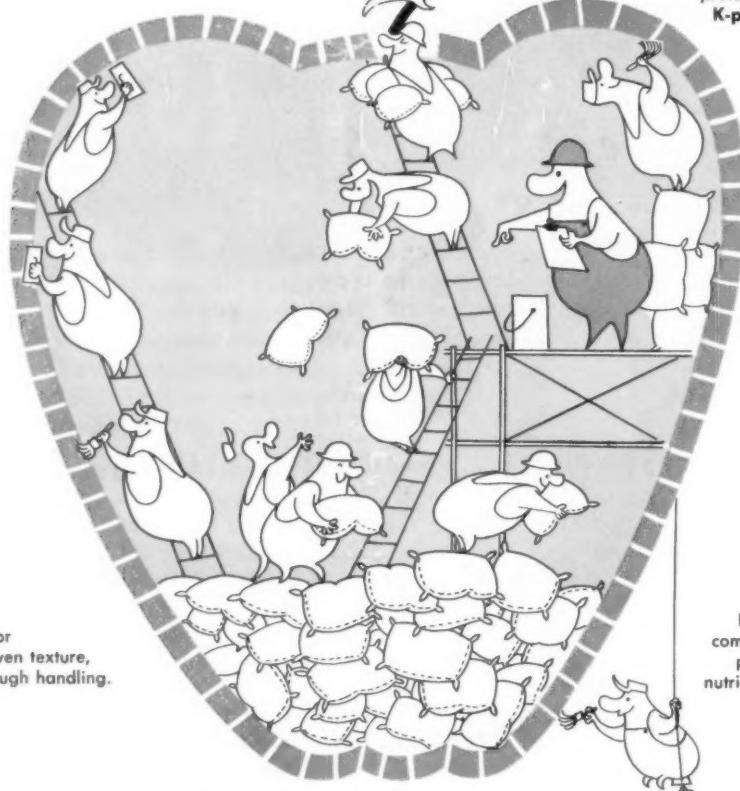
The production team moves quickly to food-factories in tree leaves, begins making sugar, proteins, vitamins, enzymes, and cellulose.



Then K-plus sulphate of potash helps rush carbohydrate raw materials to the fruit, so construction can go ahead at top speed.



Those extra carbohydrates and proteins—made with the help of K-plus sulphate of potash—are packed tightly into fruit for Fancy flavor.



Healthy skin and storage tissue, nourished by the nutrient production team, help make fruit disease-resistant, help protect it against bruises.

And vitamins and enzymes, made with K-plus help, are added too. All these help give you more fruit that grades U. S. Fancy.

Cellulose is packed in for crispness, smooth and even texture, and strength to resist rough handling.

Finally, top grade color can come naturally to healthy fruit, packed full of the important nutrients which K-plus sulphate of potash helps supply.

Specify



sulphate of potash in your mixed fertilizer...
grow more U. S. Fancy fruit

INTERNATIONAL MINERALS & CHEMICAL CORPORATION
FOTASH DIVISION



20 N. WACKER DRIVE, CHICAGO 6, ILL.

American Fruit Grower

• Fruit for Health •



Lee Jenkins

The cull—cuts your profit, ruins your disposition.

The Costly CULL . . .

Insect control costs are increasing. Keep the costly cull pile to a minimum with a good spray program. A review of the past year's insect pattern will help you plan an effective campaign in 1958

By HOWARD BAKER
U. S. Department of Agriculture

GENERALLY satisfactory control of insects and mites in orchards throughout the country, the availability of highly effective, safe insecticides, and the promise of new insecticides featured the 1957 pest control program. The most discouraging features of the year were the increasing cost of insect control and the increasing difficulty of controlling some species.

Outstanding in 1957 was the difficulty of controlling pear psylla in the Pacific Northwest. Parathion, malathion, and other materials suddenly appeared to have lost their effectiveness. Toxaphene, dieldrin, and other materials were substituted. By early summer, materials that had failed earlier were highly effective in some places. Whether the problem was resistance, the presence of an unusually high overwintering population, or low spring temperatures is not known. Only future research can lead us to the answer.

In the Cumberland-Shenandoah Valley and other eastern areas there were further indications of resistance of red-banded leaf roller to TDE. This leaf roller caused no widespread, serious damage in 1957 because many growers strengthened their spray programs. Some increased their use of TDE, and others supplemented TDE with other insecticides.

Control of codling moth was generally satisfactory in 1957. In some areas control was better than for several years. More and more growers are strengthening their DDT spray programs by using higher concentrations, making more applications, and supplementing DDT with other materials.

In most orchard areas mites were again the number one problem, especially European red mite. Research has shown that there are various types of materials that can be used in the prebloom, petal fall, and early cover sprays to delay mite increase. It has been found much easier to prevent increases of mites to injurious levels than to suppress them once they reach such a point.

Other orchard pests were of minor importance in 1957. Rosy apple aphid and apple aphid were problems in limited areas. In a few areas, plum curculio occurred on apples in larger numbers than for several years. Unspotted tentiform leaf miner, a problem pest in the Cumberland-Shenandoah Valley the last several years, was much less injurious in 1957.

Pests of peach and other stone fruits were well controlled, with a few exceptions. Catfacing of peaches by tarnished plant bug, stink bugs, and perhaps other insects was the most serious problem. Oriental fruit moth increased slightly in a few areas. The same was true of European red mite and lesser peach tree borer. Control of plum curculio and peach tree borer was generally satisfactory.

Fruit growers have reason to be proud of their success in preventing insects and mites from damaging

(Continued on page 49)

'How I Grow FANCY MACS'

Champlain Valley's Bill Duffield relies on spraying know-how to get clean, sound fruit

By WILLIAM H. DUFFIELD

KNOWING how and when to spray are major keys to success in raising quality apples. Advice given to me by more experienced growers of Clinton County, N. Y., and top-flight local labor were also two big factors that helped put me on my feet in the orchard business.

For the past six years, my spray program has enabled me to grow apples that grade out 95% U. S. Fancy and 98% scab free. My first orchard—35 acres of bearing and 40 acres of non-bearing trees—at Plattsburgh, N. Y., in the Champlain Valley, was profitable enough for me to purchase another farm of 500 acres a year ago at Valcour, N. Y., about 12 miles away. This second farm has 65 acres of full-bearing trees on which I have continued my spray methods with encouraging results.

Most of my trees are situated on moderately rolling terrain, in fine, sandy soil. On the two places, I grow around 30,000 bushels of McIntosh, and a few thousand bushels of other varieties—principally Delicious, Cortland, and Snow. Ours is an apple country that stresses quality over quantity per acre; we find that marketing is never a problem if you have a top-quality product.

I believe you should analyze your

Now 34, Bill Duffield was born at Malone, N. Y., the son of the Rev. John R. Duffield, a Presbyterian minister. He began studying pomology at Cornell University in 1941, and was graduated with a B. S. degree in 1951, with army service and plenty of hard work as a civilian in between. In the Hudson Valley of New York, he gained orchard management experience, and discovered, he says, that it takes both brains and brawn to make an orchard make a profit. With the purchase of his second orchard at Valcour, N. Y., one quickly comes to the conclusion that Bill Duffield must indeed be learning how to make orcharding a worthwhile way of life.—Ed.

weather conditions carefully, and then spray just before and during the rain to protect all new foliage. By keeping your weather eye peeled for the right moisture and temperature, and utilizing proper timing, you can cut down on your number of

sprays, and substantially reduce costs. Last year, all told, I used seven sprays on the home farm and eight at Valcour. Thorough, painstaking care in spraying pays off.

We use a high-velocity Model H Buffalo turbine sprayer that is un-

lights on the tractor and sprayer, our 8x spray patterns can be seen better at night.

Scab is the main problem in our area. My main fungicide is Crag glyodin, but I also use some captan (Orthocide 50W and Stauffer Cap-



Bill Duffield checks tank on his Model H Buffalo turbine sprayer before starting to spray.

usually well engineered. It sprays one side of the trees, and we go down one side and up the other. I also have another sprayer which gets two sides when there is no wind. Of the two pieces of equipment, the turbine is my favorite. However, in my opinion, the man spraying is more important than the type of spraying equipment. By spraying steadily with the turbine we cover extensive ground.

Our sprayers are pulled by tractor and jeep, and we try to keep the speed steady. It's easy to slow down to miss a hole, and put entirely too much spray on a tree. My speedometers are attached to the sprayer wheels, and we never go more than 2 miles per hour.

Most of our spraying is done at night to minimize drift. Remember, you are working with air, and watch its turbulence carefully. With good

tan 50-W) and Fermate. Due to the adhesiveness of glyodin, and to 8x concentrate, my sprays stick well when they are put on in the rain. In fact, any chemical I have used in combination with glyodin has worked better because of this spreader-sticker action. I applied DDT for codling moth control on June 19 on my home farm trees, and through July, I felt that the DDT was still working due to the sticking action of Crag. Cool weather also helped.

The 8x concentrate is applied by the turbine—with the other sprayer we use 4x. To avoid any foaming in the tank, we add glyodin last. Also, I removed a couple of paddles from the turbine sprayer's tank so that the glyodin could pour down the side instead of directly into the water.

Glyodin leaves no visible spotty residue, thereby aiding high finish.



Picking U.S. Fancy Macs off well-laden limb.

We have never had any spray burn from the 8x concentrate, except when Systox was combined with NuGreen and ferric sulfate used as a safener. But here again the cool weather in the Champlain Valley is partly responsible for the lack of spray burn.

In controlling insects, we spray according to the problem. We watch carefully for the appearance of codling moth, red spider mites, and apple maggot. I try to select our materials and time our sprays so we will do the least possible damage to our allies, the wild bees and natural predators.

Mites and apple maggot were not major problems during the past season. The mites stayed in the grass and never really got up into the trees. Although I used some DDT for codling moth control, my principal material is lead arsenate. I watch the temperature closely, and have had no trouble combining it successfully with Glyodin in the spray mixture. In warmer climates I don't believe this combination would be safe.

My non-bearing trees were sprayed once last season for scab and insect control, and we opened only two nozzles on the turbine. We used just 100 gallons of 8x spray on the 1300 young trees.

There are many other cultural practices besides spraying that are

important in orchard management. I believe in plenty of careful pruning. On the home farm we have successfully rejuvenated many 50-year-old trees by intensive use of our Henry pneumatic pruners. By making a large number of small cuts in the right places, you can successfully bring back trees over a period of years.

My practice is to prune twice a year—once in the winter and again in the summer. On the Plattsburgh place, we have the 1200 bearing trees in just the condition we want them—so an 18-foot ladder can set over the top of any tree. By having low, open trees we get better-colored fruit that grades out Fancy. We also carefully cut off low-lying limbs, and keep roadways open.

I never mow my orchard until hay cover is mature and gone to seed. A good growth of wild vetch or trefoil

(Continued on page 59)



Howard Cayea unloading apples at the packing shed of Dufeld Orchards, Plattsburgh, N. Y.



Bill examines speedometer attachment on sprayer wheel. Operator on tractor or jeep keeps the speed steady, at about 2 miles per hour.

Growers prepare to meet Dame Nature's challenge as they plan their 1958 campaign of

DISEASE CONTROL

By DWIGHT POWELL

University of Illinois

CLIMATIC conditions in 1957 were extremely favorable for fruit disease development. Monthly rainfall in Illinois varied from county to county, with a range of 7 to 14 inches per month during April, May, and June. It rained 21 days in April at Urbana, which set the stage for severe epiphytotes of the more important diseases on apples, peaches, strawberries, and grapes.

Apple Scab. For many years this disease, except for a few isolated orchards, has been successfully controlled. In 1957, however, Illinois fruit growers were reminded that scab can be serious.

Infection developed sufficiently early on the primary leaves so that secondary invasion of the terminal growths was visible before petal-fall. The winter carryover of scab is greater than for many years, and Illinois fruit growers will make a concerted effort in 1958 to keep it under control. Since the 1957 infection started before the first sprays were applied, many growers are planning to use a delayed dormant



Peach brown rot apothecia ready to discharge spores. Sanitation is important for control.



Overwintering fire blight canker on apple twig.



Cedar apple rust infection on two Golden Delicious (left) and two Winesap leaves (right).

spray in the spring for control.

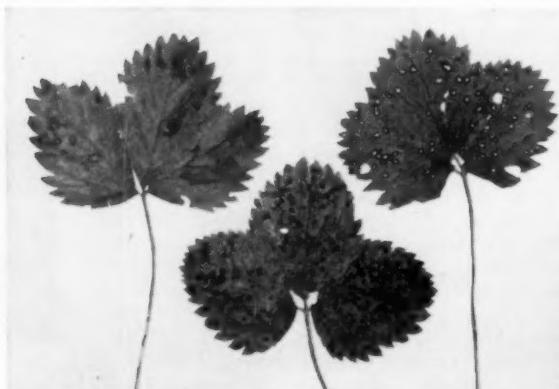
There is much concern over the fact that secondary invasion of the terminal twig leaves is so frequent and that these infections soon become the main source of inoculum. The reason for this abundance of inoculum may be because there is a

tendency among growers to drive their air-blast machines at a too rapid rate of speed to secure thorough coverage.

Cedar Apple Rust. There is a tendency to over emphasize the importance of the fungicide when securing adequate disease control rather than point out the importance of other contributing factors. In 1957 with exceedingly high rainfall and long periods of high humidity, weather played an integral part in disease incidence. Environmental conditions were ideal for germination and growth of cedar apple rust

(Continued on page 50)

Three main strawberry leaf diseases: (left to right) leaf blight, leaf scorch, leaf spot.





REPORTS WESTERN EDITION

Washington's 1958 Spray Highlights

WITH the materials now available to combat insects and diseases, the spray program for the coming season does not appear to offer any serious obstacles. The real and fundamental problem is to get all the persons involved to do the right thing at the right time.

Since the advent of organic sprays nine years ago, from two to five new materials have been introduced each year. This creates problems in selecting the most efficient spray program. Also, since fungicides, insecticides, and nutrient sprays are often mixed, it poses a problem of compatibility and the prevention of injury to the fruit.

These organic sprays were the salvation of the fruit industry. So dramatic was DDT in its control of codling moth that a feeling of complacency grew among growers.

But in 1956 the industry was shocked to learn that codling moth was again a problem. The comeback was *not* due to resistance, but to a laxity in the spray program. Investigations showed some growers were using too little DDT and others, poor timing. Emphasis on their problem in 1957 almost completely eliminated the culage from worms in north central Washington. However, this problem will again have to be given attention in 1958.

This complacency was further disturbed in 1957 when pear psylla assumed first place among insects showing resistance to the recommended parathion. Many pear crops showed serious damage before the infestation was brought under control. Malathion was reported from fair to good—being more effective

in warm weather. Dieldrin was reported as very good, with results being apparent faster in warm weather. Toxaphene was also reported as being very good.

Because psylla is so quick to move from one orchard to another, success of the control program this year will depend greatly upon unified area co-operation during the spray season.

Pear psylla is difficult to control, and the program is further complicated by several cautions that should be heeded. The summer sprays should be applied when the "hard-shell" nymphs are at a minimum. Toxaphene and dieldrin cannot be used within three weeks of harvest.

Fire blight in pears during the past season staged a serious comeback. A few orchards scattered throughout the main pear districts in Yakima, Chelan, and Douglas counties had a small amount of blight in 1957. Rainy weather during the bloom season in 1957 and succeeding hail storms resulted in the worst outbreak since 1948.

Inspection of orchards, after the cutting of blight was presumably completed, revealed many blight cankers still active. An active control spray program this spring is anticipated, with Bordeaux or basic copper sprays the predominate materials. Spraying or dusting is recommended when the trees are in full bloom, two weeks later, or sooner in the case of heavy rain, and once again in two weeks.

Apple scab is a problem in some of the higher areas that are subjected to more rain than elsewhere.

Growth regulator sprays: In addition to these insects and disease sprays, about 65% of the apple acreage will be covered with blossom thinning sprays. The largest share of these sprays are used on Winesap and Golden Delicious. Many growers are still reluctant to use them on Red Delicious, although it has been shown that it can be done.—James K. Ballard, County Agent, Wenatchee.

Resistance Develops in California

CALIFORNIA peach growers can expect more of the same insect and disease problems of last year in the 1958 season. The past season was filled with twig borer, mite, brown rot, and enough other problems to make even the most meticulous fruit grower stop to reconsider his spray program.

San Jose Scale. Populations of San Jose scale are on the increase in most peach areas of the state.

Applications of dormant oil spray, thoroughly applied, still offer the best means of control. Areas of low winter rainfall may have to rely on parathion and oil combinations to decrease possibility of oil injury.

When populations are discovered during the growing season fruit can be protected with parathion and summer oil applied around June 1. Thinning and residue problems may interfere with this spray. November or pink bud sprays applied in combination with fungicides, can also be expected to contain this scale.

Brown Rot. This fungus disease proved disastrous to early season fruit in several areas. Fruit rotted in transit as well as in the orchard. Rains during bloom produced severe blossom blight and a large reservoir of spores for infection of early ripening fruit.

Both sulfur and lime sulfur applied during bloom and jacket stages can reduce this spore population. Many growers may find it uneconomical and impracticable to apply these sprays because of ground conditions. However, problem blocks should receive bloom or jacket sprays as well as fruit coverage sprays just prior to harvest. The sulfur materials still offer the most promising and cheapest control possibilities.

Mites. Of the three important mites on peaches, the brown almond and European red appear to be increasing in numbers.

At least three reasons are evident for failures in controlling these two
(Continued on page 57)

State



NEWS

- Washington Apple Growers Eye Federal Marketing Agreement
- All Money from Michigan Sweet Cherries Earmarked for Promotion

Hints at Withdrawal

WASHINGTON—Apple growers of the state might withdraw their support of National Apple Institute if more vigorous advertising of the healthful qualities of the fruit are not employed.

This possibility was brought out in a speech by Rueben Benz at the recent 53rd annual meeting of Washington State Horticultural Association in Wenatchee. Benz is a former state apple commission member and former NAI president.

Initial steps toward a federal marketing agreement were also taken at the meeting. Explaining marketing agreements, Karl Hobson, Washington State College marketing specialist, warned that in the long run, price increases might not



Arthur Rich (left), Yakima, newly-elected president of Washington State Horticultural Association; Victor Morgan (center), Omak, first vice-president, and Dr. John C. Snyder, extension horticulture specialist, retiring president, who was re-elected secretary-treasurer. Other officers include E. J. Newcomer, Yakima, second vice-president; Herman R. Praetorius, Tilton, and James C. Kerman, Oroville, directors.

offset reduced volume—instead, only loss of customers might result.

Caution in using blossom-thinning spray, particularly if trees were overloaded the previous season, was urged by a panel of growers. Nothing can beat the old handgun in doing an effective job, it was brought out.

Steps to help prevent russetting of Golden Delicious include pruning to keep branches stiff, inclusion of a wetting agent in sprays, avoiding application of sprays when temperatures are above 90° or when it is cold and humidity high. These points were covered by Clayton Robison, Chelan grower.

Using 20 ppm of 2,4,5-TP in June has helped reduce preharvest drop of Italian prunes, Dr. Leif Verner, University of Idaho, told the convention. Exact timing and concentration of sprays await further tests, he added.

Free of Insect Injury

INDIANA — Because their 1957 apple crop was the nearest free of insect injury, W. W. and Max M. Kercher, Sunrise Orchards, Inc., Goshen, received the top rating in a three-state check by USDA investigators.

The Sunrise Golden Delicious crop scored 99.4% free of insect damage.

PRICE SUPPORTS

A large part of agriculture is paying higher taxes and prices as a result of the effort to help the rest of agriculture by price supports. On the basis of value of sales, less than half of farm products are under price supports. The six basic crops for which price supports are now mandatory by order of Congress represent less than 30% of farmers' income from marketings.—Committee for Economic Development.

Crediting their success to diligent spraying, the Kerchers say they never let up with their program. The control program consisted of seven spray applications starting at calyx, supplemented by some 10 to 12 dusts applied during prolonged wet or rainy periods. A dust program for control of scale was used up to bloom time.

About 10,000 fruit trees grow on the Kerchers' 221 acres, with 125 acres in apples. They use a Hardie Air-King sprayer operated at 4x concentration. The spray and dust program was worked out with Niagara Chemical Division, using Niagara products, including Niaciad. Max Kercher is president of Indiana Horticultural Society.

Heads Pomological Society

CONNECTICUT — Brainerd T. Peck, Bureau of Markets, State Department of Agriculture, heads Connecticut Pomological Society as president. Franklin H. Bubbell, Easton, was named vice-president at the annual meeting last December. Re-elected were S. P. Hollister, secretary, and Nelson B. Cooke, treasurer.

John Bell, Barrington, Ill., gave a talk on "My Experiences with Consumer-Pick Plan". The society presented a resolution to study bird injury to fruit.—S. P. Hollister, Sec'y, Storrs.

Sweet Cherry Promotion

MICHIGAN — Beginning with the 1957 season, all money collected from sweet cherry growers in the state will be earmarked for promotion of the crop.

The Michigan Cherry Commission has also decided to direct the appointment of a suitable organization to promote sweet cherries without going through the West Coast Sweet Cherry Growers and Industries Foundation. Previously, the com-

FRUIT PEST HANDBOOK

(SIXTY-FIRST OF A SERIES)

ROOT KNOT OF STRAWBERRY

A COMMON and often unrecognized parasite of strawberry plants is the root-knot nematode. This nematode, a minute worm less than 1/32 inch long, lives in plant roots, but can exist for considerable periods in the soil. Like most other plant-parasitic nematodes, it can attack many crop plants; once a soil is infested, this nematode is difficult to eradicate by crop rotation.

Only one of the several species, the northern root-knot nematode (*Meloidogyne hapla*), is known to attack the strawberry. When strawberries are grown in infested soils, nematodes enter roots and, even though the soil is removed from plants before they are packaged, the nematode will survive inside the roots of infected plants during storage and shipping.

Northern root-knot nematode is most common in the northern half of the country. In the colder areas it apparently does not build up to the enormous numbers sometimes found elsewhere. In the southern states it is often found in soils in which infected strawberries have been planted or where peanuts, another favorite host, have been grown extensively.

It spreads most rapidly in sandy soils, and is more destructive on light soils than on heavy ones.

Symptoms. When northern root-knot nematodes enter strawberry roots, they produce elongate to rounded enlargements, or galls (see photo). These galls range from barely visible swellings up to those 1/4 inch in diameter. In severe infections the deeper roots appear to have been pruned off. There is a tendency for side roots to develop above each gall.

The seriousness of root knot is sometimes questioned because infected plants often produce yields accepted as normal. Recent experiments have shown that when root knot is controlled there is an increase in number of daughter plants produced and in fruit yields.



Photo Courtesy USDA

Northern root-knot nematode infection is shown on a Blakemore strawberry plant.

Control—by Nurseryman. Most nurserymen are aware of the damage root-knot nematode can cause, and are attempting to produce plants as nearly free of the pest as possible. They have at their disposal several methods:

Chemical fumigation of soil before planting, to eliminate most of the nematodes. (Continued on page 51)

mission had allocated \$2000 to \$2500 a year to be administered by the foundation in promoting brine sweets. However, the basic difference in markets for eastern and western maraschino cherries justifies separate, although complementary, promotional programs. A high per cent of western sweets are sold as whole fruit or "bottled" cherries, while most brine sweet cherries of the East go into ice cream and candy manufacture.

Other factors also account for the commission's action. 1) Revenue from sweet cherries is increasing, with about \$15,000 collected last season. 2) Increase in plantings in the state necessitates heavier promotional activity. 3) Amount of brined cherries in the U.S. is climbing: 214,501 barrels in 1956; 318,829 barrels in 1957; 10-year average, 277,000 barrels. 4) Growers have expressed dissatisfaction with previous promotion methods.

However, the commission will continue a \$250 membership in the West Coast organization in order to present a united front on import tariff regulations.

Revenue for Michigan sweet cherries is collected in the same method as for sour cherries. A state law provides that processors deduct \$2 per ton from cherry growers upon delivery of the raw fruit; this money is turned over to the commission. From 70 to 75% of growers participate in the sweet cherry program.—George McManus, Jr., District Marketing Agent, Traverse City.



New officers of Oregon Horticultural Society are (seated, left to right) Orville Hamilton, Central Point, president; William Hazelton, Parkdale, second vice-president; Steven Nye, Medford, third vice-president; (standing, left to right) Ross Hukari, Hood River, immediate past president; Paul Willard, Salem, treasurer; C. O. Rawlings, Oregon State College, secretary; Walter Leth, Independence, first vice-president, is not shown in photo.

Oppose Wage-Hour Proposal

OREGON—Opposition to proposed legislation for minimum wage and maximum hour regulations to agriculture was expressed at the recent 72nd annual meeting of the State Horticulture Society.

The group maintained that farming, particularly in the field of fruit and vegetable crops, cannot be operated on a 40-hour week during ripening period for crops. Minimum wage provisions would also be impractical for harvesting crops, most of which are now handled on a piece-work basis. Such regulations would add an estimated \$75 an acre to Hood River and Medford growers' costs.

Robert Birckland, Portland, North Pacific Canners, recommended establishment of a small fruit commission to

Read about the results Mr. Max Kercher of Sunrise Orchards, Goshen, Indiana, got with a Hardie Air Stream Sprayer.

Now you can spray apples, peaches, cherries with a big volume high velocity air stream—35,000 cfm. with the Hardie Duo-Fan Model DF-24B or 50,000 cfm. with the new Hardie DF-26D . . . Use either concentrate or dilute spray . . . Enjoy absolute pest control at lowest cost per acre . . . The higher price you get for quality fruit pays for the sprayer . . . You can also spot spray with a hand gun . . . Spray shrubs, gardens, weeds, brush . . . Apply insecticides, liquid fertilizer, disinfectants . . . Flush animal stalls, pens . . . Whitewash buildings, fences . . . Clean tractors, trucks, autos . . . Put out fires.

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If you have a big acreage pest control job in orchard or grove, you need the magnificent new Hardie Duo-Fan Model DF-40, delivering more than 80,000 cubic feet of air per minute—the largest air stream sprayer ever built, and the most modern. Another model, the Hardie Duo-Fan Sprayer Model 26D, is especially designed for average fruit acreage. Delivers air at 50,000 cfm. Hardie also builds High Pressure Sprayers for orchard and row crop spraying in a wide range of sizes and styles.



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to use to control every fruit pest from apple scab to sooty blotch. These charts also tell you exactly *when* and *how* to use it.

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promote state strawberries, blackberries, and raspberries.

Strawberry production has increased 1 ton to the acre, while per capita consumption has dropped nearly a pound a year. Governor Robert D. Holmes expressed concern that an estimated 3300 acres of Oregon strawberries will go out of production next spring, dropping a \$1 million annual payroll. He offered the support of the state government and the Oregon agricultural research program to help growers meet the increasing problems of maintaining the industry in a competitive position.—*Harold and Lillie Larsen*.



Photo: Rutgers University

1958 officers of the New Jersey State Horticultural Society are, left to right, Arthur J. Farley, New Brunswick, treasurer; Clarence H. Steelman, Jr., Princeton, vice-president; Charles Maier, Pine Brook, president, and Ernest G. Christ, New Brunswick, secretary.

Pest Control

NEW JERSEY—Highlights of the recent 83rd annual meeting of the State Horticultural Society included an outline of the proposed 1958 apple spray schedules by Dr. Spencer H. Davis, Rutgers University pathologist. Based on fungicide combinations, three schedules will be available, including sulfur-captan (Orthocide and Stauffer Captan), captan only, and glyodin-captan. Results of research by Dr. B. F. Driggers, Rutgers entomologist, showed excellent mite control through use of glyodin as compared with captan. A glyodin-Ryania schedule gave no mite problem all year.

A reduced selective apple spray schedule was studied last year by H. B. Specht, who found plum curculio to be the most destructive insect. The selective schedule included glyodin as a fungicide, and Systox, lead arsenate, and Ryania as insecticides. In one 8-acre orchard, average per cent insect injury on harvested McIntosh and Stayman was codling moth (2.8), plum curculio (4.0), leaf roller (2.2), and miscellaneous (0.1).

Dr. J. W. Heuberger, Delaware, spoke



APPLES FOR THE GOVERNOR

Robert Smylie (left), governor of Idaho, received a box of apples from Leslie Reed, Emmett, 1957 president, at 63rd annual meeting of Idaho State Horticultural Society in Boise last December. More than 400 persons attended the two-day sessions. The society voted to increase annual membership dues from \$2 to \$5.—Anton S. Horn, Sec'y-Treas., Boise.

Special Report on
FLORIDA FREEZE

COLD WEATHER on December 12-13, followed by more cold weather on January 9-10, dealt a major blow to Florida's 1957-58 citrus crop and possibly reduced future crops. USDA placed losses in current crop at 22 million boxes oranges, 4 million boxes grapefruit, and 1.5 million boxes tangerines. Industry spokesmen immediately classed estimate as too low, and Florida Citrus Mutual says orange losses will reach 24.5 million boxes. Mutual also placed grapefruit losses at 7.5 million boxes, against USDA's 4 million.

December cold extended over most of state except lower east coast and injured some young citrus plantings in unfavorable locations. Industry leaders say many of these will be abandoned.

To make sure that only good fruit gets into fresh fruit markets, the Citrus Commission placed an embargo on all fruit for week-after-December freeze, which was followed by Christmas week embargo by marketing agreement committee.

Some trees defoliated by December freezes had started putting out tender new growth, which was nipped by January cold. This probably will reduce 1958-59 harvest; but older trees in suitable locations are expected to make full recovery.

Based on limb count following cold, Federal Crop Estimator J. C. Townsend said there is serious wood and foliage damage to 12% of citrus trees, serious foliage damage to 20% more, mild damage to 40%, and no damage to 28%. If previous cold spells are criterion, production will be static for about four years.—J. Francis Cooper, Ext. Editor, University of Florida, Gainesville.

on research in botryosphaeria rot control. Infection occurs on wood and fruit, and may begin as early as April and May. The disease resembles black rot. Rome and Lodi are most severely infected in Delaware. Drought or anything that reduces tree vigor increases this rot, with the best fungicides appearing to be captan and zineb.

Botryosphaeria rot is also present in New Jersey, according to Dr. Robert H. Daines, Rutgers pathologist. The suggested schedule consists of 1 pound each of captan and zineb every two weeks from fourth cover until harvest. Dr. Daines reported that captan, lead arsenate, and DDT gave best finish on Golden Delicious, and either captan, lead arsenate, and Ryania, or captan, dieldrin, and Ryania gave best finish on Stayman.—Ernest G. Christ, Sec'y, New Brunswick.

Labor Racketeering

ILLINOIS—A drive on labor racketeering is underway by the American Farm Bureau Federation. But the U. S. Justice Department has informed the farm bureau that collection of unloading fees does not constitute a violation unless violence or fear of violence is present.

Nevertheless, AFBF's Matt Triggs witnessed a forced collection of \$18.40 for unloading a truck at a chain store warehouse. What made this possible, Triggs pointed out at an annual meeting in Chicago, is the collaboration of warehouse employees with the teamsters union in refusing to handle loads for which the unloading charge is not paid. This is known as secondary boycott and, through its use, unions can exert their power over farmers and compel organization of farm workers.

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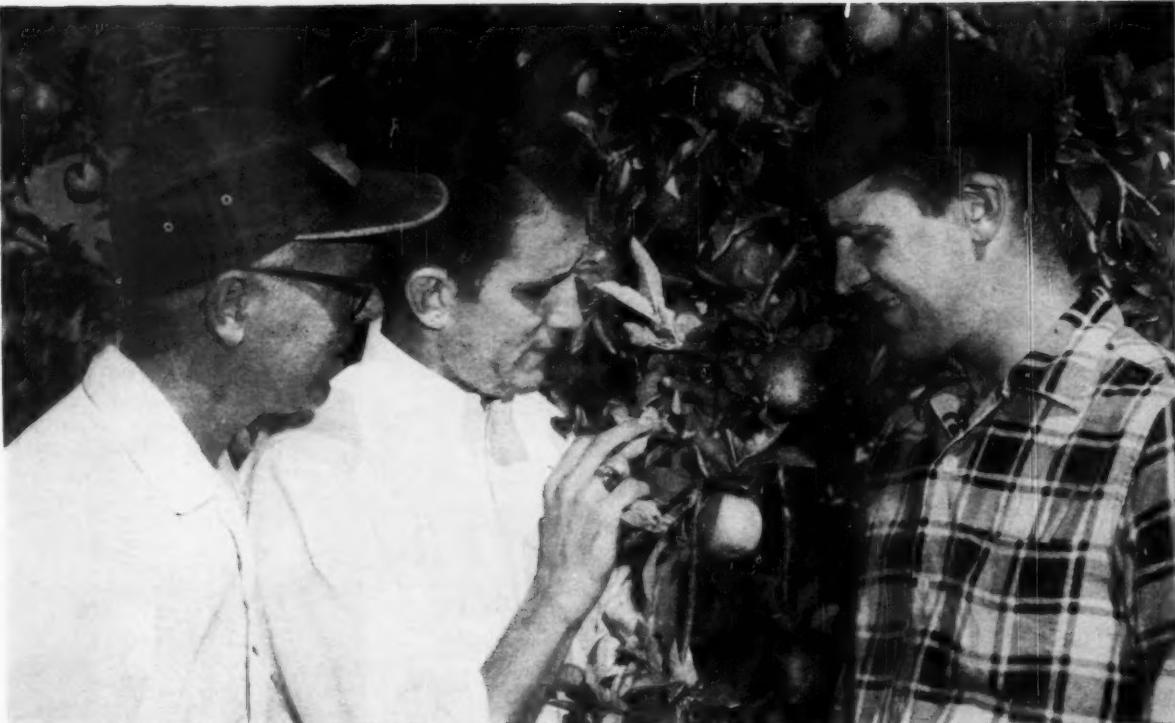
(From a field interview with Mr. Stewart)



Emery Leow,
Oak Harbor, Ohio.
Chief crops:
Peaches, apples, plums

"We have a record of 96% clean fruit in Ohio, which is considered excellent by the Ohio State Agriculture Extension Service. We attribute this high success to the ORTHO insecticides and fungicides. ORTHO materials are of the very best quality and are consistent. These materials coupled with timely spray programs have helped us achieve such a high percentage of clean fruit."

(From a field interview with Mr. Leow)



**Jay L. Dickinson (left)
and Peter L. Dickinson,**
Barker, Niagara County, New York, with ORTHO
Fieldman James W. Coulter (center).

"We have been on the ORTHOCIDE program for 5 years. The schedule has not only given us good insect and disease control but has also improved our finish. It is our opinion that the keeping quality has also been extended and the fruit is definitely showing more customer appeal. We're packing our apples under the "Somerset" label, which we ship to the Eastern fresh fruit market. We feel that there is nothing like the ORTHO program."

(From a field interview with J. L. Dickinson and R. L. Dickinson)

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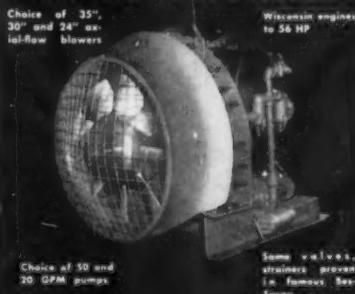
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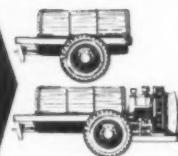
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Berries

BRAMBLES

Anthracnose Control

ANTHRACNOSE is a disease that attacks all raspberries and blackberries, but is much more serious on black caps than on other brambles.

The disease first appears on black caps as small gray or white spots upon the canes, and usually has a purplish margin. The spots are generally more numerous near the ground, where they entirely surround the cane, girdling it and cutting off the moisture supply to the upper parts. The fruiting canes then wither and die.

When infection is heavy, the individual fruiting spurs high up on the canes are often killed. Lesions may occur on the leaves as well. Some growers refer to these as cane-spot, rust, gray bark, and scab.

The disease is caused by a fungus, the spores of which are spread by rain early in the season when the new growth is young. As the new plantings become infected from the stub of the old cane, our first practice in combating the disease is the removal of all the old stub from the new plant at the time of setting. Clean cultivation and keeping the space around the plants free from grass and weeds are other preventive measures.

However, we have found that the only sure means of holding the disease in check is by spraying. The traditional method is a dormant spray of 3 gallons of concentrated lime sulfur in 50 gallons of water applied early in the spring when the first leaves are about a half inch long. If the young foliage is more advanced, the spray may burn or kill the leaves. This spray must be applied just at this time, during the first week or 10 days that the plants are green, and the entire surface of the cane must be covered.

For the last two years we have used DNC (such as Elgetol or Krenite) instead of liquid lime sulfur as a dormant spray. Both were used at the rate of 2 quarts to 50 gallons.

If the disease reaches the serious stage, we apply a summer spray of 2-6-50 Bordeaux mixture about 10 days before blossoming, covering the young canes and the base of the fruiting canes only. If anthracnose control is started with the setting of the new field, an application of 2-6-50 Bordeaux mixture should be made when the new shoots are from

five to eight inches high.* The following spring we apply only the dormant spray unless the disease again becomes serious.—James Shoemaker, Hammonton, N.J.

BLUEBERRIES

Fresh or Frozen

WITH some 3600 acres of blueberries under cultivation, Atlantic County, New Jersey, is rapidly becoming the commercial "Blueberry Center" of the nation. About 1300 bushes are grown to the acre and per



Blueberry grower William Bertino (left), Atlantic County, New Jersey, discusses with M. O. Whithed, rural supervisor of the Atlantic City Electric Company, the power needs necessary in marketing the tons of blueberries that are harvested annually on the Bertino farm.

acre production averages around 900 quarts.

The berry industry in the county started some 30 years ago, but only in the last half dozen years have modern facilities been developed to clean, cool, and freeze the berries. Growers now can hold berries until prices are right and can freeze a quantity of them for the bakery trade.

One of the larger growers in the area is William Bertino who has 250 acres in berries near Hammonton. Mr. Bertino became interested in growing blueberries in 1926 when he invested his total savings of \$270 for some experimental plants. Most of the first tender plants died that summer, however, when hot weather hit and Mr. Bertino didn't know how to combat the high temperature.

Dismayed but not discouraged, he tried again the following year; learned about shading the plants and how best to water them; and has been

*The New Jersey Agricultural Experiment Station recommends a 6-6-100 Bordeaux mixture applied one to seven days before bloom (about May 15). A commercial copper fungicide at the strength recommended by the manufacturer can be substituted for the Bordeaux mixture. Lime sulfur is no longer recommended as a delayed dormant spray for anthracnose control. Instead DNC (such as Elgetol or Krenite) at the rate of one gallon of DNC in 100 gallons of water is recommended.—Ed.

expanding his operations ever since. His present practice is to start shoots from his own bushes in a greenhouse, and transplant them into his nursery the second year, and the third year transfer them to the field, where they start bearing, in a small way, the fourth season.

Mr. Bertino employs 300 pickers during the season, which starts in early July and usually lasts until September. Most of his workmen live in the surrounding area. Puerto Rico laborers imported for the harvest season live in small tenant houses on the Bertino farm or in nearby transient communities.

It takes a lot of electric power to keep the Bertino blueberry farm going. A report from the Atlantic City Electric Company, which serves it, shows that in 1955, during the three months of July, August, and September when operations are at their height, a total of 13,650 kilowatt hours of electricity was consumed. Much of this big electrical load is concentrated in the cooling and freezing structure.

At the Bertino farm berries are trucked in from the field and immediately placed in the cooling room, where they are held until a sufficient quantity has arrived for cleaning operations. The cleaner is of the reciprocating or shaker type which removes dirt and leaves from the berries and then sends them on their way, via conveyor, to the packer. He either places them in crates or in cans for



View of part of 250-acre Bertino blueberry farm, showing pickers in the background.

freezing, depending on how the berries are to be marketed.

Cooling and freezer operations on the Bertino farm require motors totaling 30 h.p. Included are two 10 h.p. motors to operate the circulating pumps which send the liquid freezing agent through the cooler and freezer coils, two 2½ h.p. motors to operate the compressors in each room, and other motors ranging from 1 to 3 h.p. to drive ventilation fans, cleaner, and conveyor. The Bertino freezer has a capacity of 40 tons of berries, and the cooling or holding room has a capacity of 10,000 crates.—*Russell Gingles, National Electrical Manufacturers Association.*



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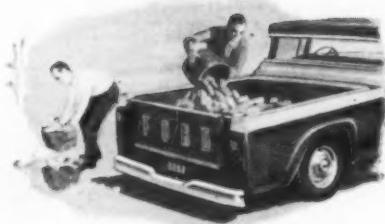
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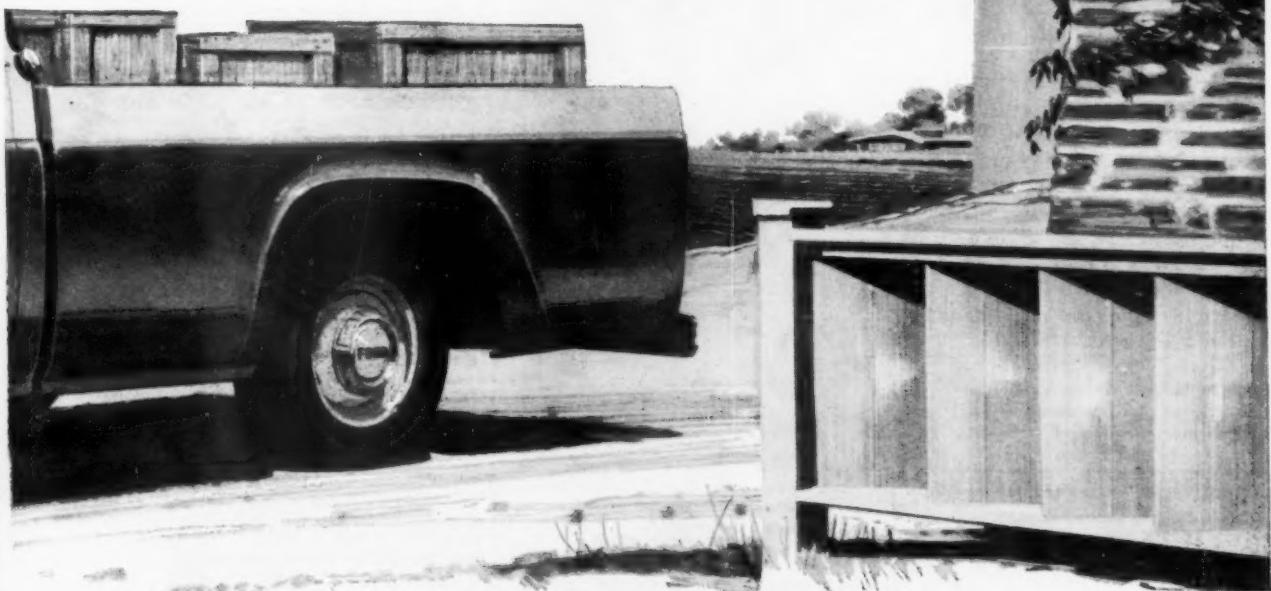
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PECTINOL A

In the Michigan State University bulletin on apple juice preparation, Pectinol A is discussed. Could you tell me where I can buy it?—California.

Rohm & Haas Co., Washington Square, Philadelphia 5, Pa., the manufacturer, will be able to advise a local source of supply or will supply you direct.

DYMOND PEAR

Do you have any information on the Dymond pear?—New York.

The Dymond pear originated in Sullivan County, Pa., by Adams County Nursery and Fruit Farms, Aspers, Pa., and was introduced in November, 1954. Its parentage is unknown. Fruit is slightly larger than Bartlett, with a little more skin color than that old variety.

WHAT ABOUT BULK BOXES?

What about the quality of the apples in the bottom of pallet boxes? I should think that the weight exerted on the apples on the bottom would crush them.—Connecticut.

According to H. P. Gaston, co-author of "Handling Apples in Bulk Boxes" (Mich. Agr. Expt. Sta. Spec. Bul. 409), bruising studies show that no bruising occurs due to the weight of the fruit until a pressure of at least six or seven pounds has been reached. When this critical point comes, a number of cells collapse and a bruise does occur. In theory this point is not reached until apples are piled at least five or six feet deep. In other words, bulk boxes can be used without even approaching the point at which bruising occurs.

During the 1956 season something like a million bushels of Michigan apples were handled in bulk boxes and practically all of the growers and processors involved say that they had less bruising rather than more.

ROSE CHAFER CONTROL

Rose chafers appear about the time my raspberries are blossoming and starting to set fruit and by feeding on the new berries deform and destroy them. What can I use that will control the pests but not leave a dangerous residue on my berries?—Michigan.

Pyrethrum, applied in repeated sprays prior to the attack by the rose chafers, will protect the raspberries. However, once the rose chafers start feeding on the berries they have a tendency to return again and again.

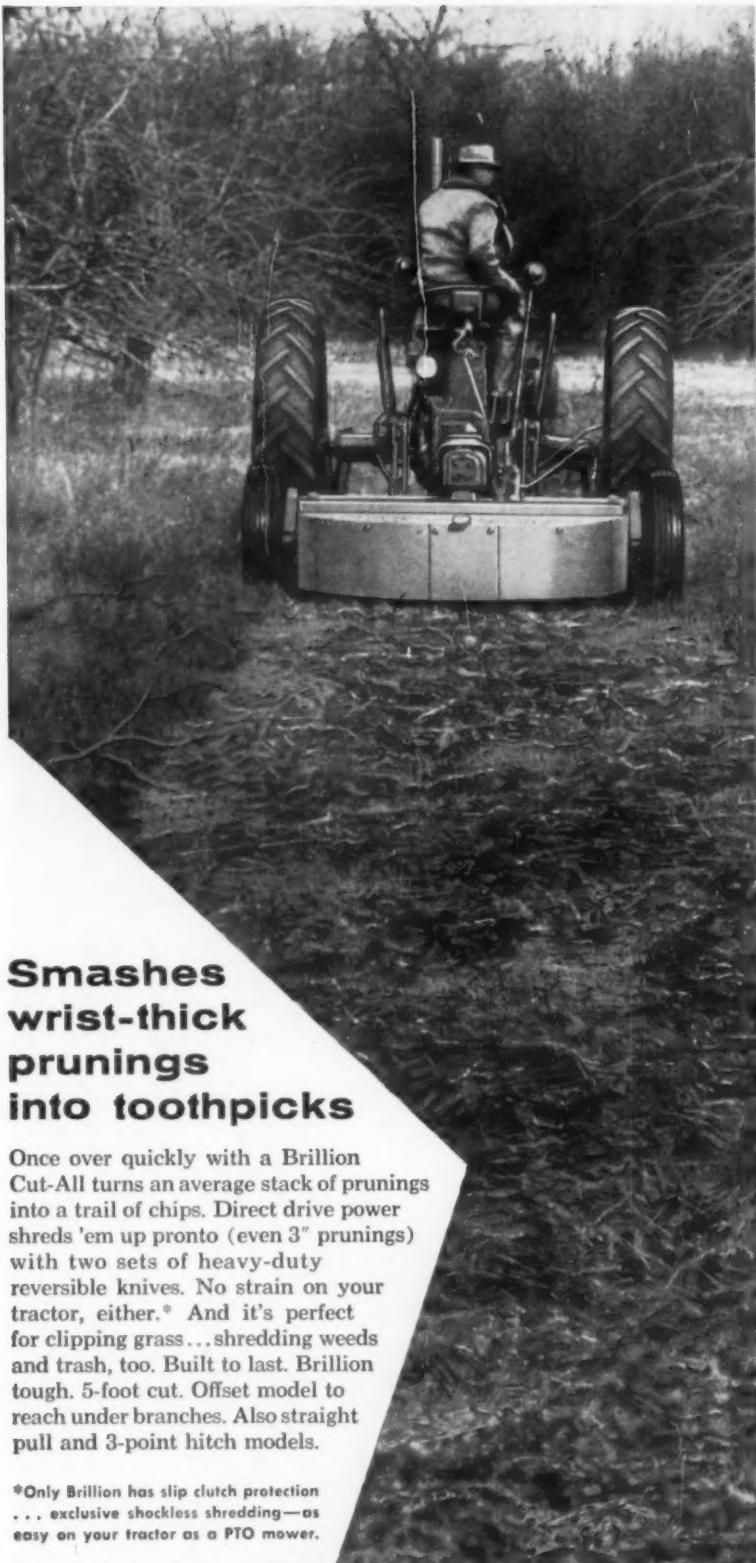
Commercial growers in Michigan, according to Ray Hutson of Michigan State University, generally use TEPP but this is a highly dangerous insecticide and the strictest possible safety precautions should be taken when using it.

BIRD PROBLEM

We are having a problem with birds damaging our fruit. What can you suggest to help us solve the problem?—New Jersey.

We are sending our reader a tear sheet from our August, 1956, issue which tells about the various bird scarers. A list of bird-control devices and the names of manufacturers can be obtained by writing to the U. S. Fish & Wildlife Service, Agricultural Hall, Purdue University, West Lafayette, Ind. See also the July, 1957 Buyer's Guide issue of AMERICAN FRUIT GROWER, page 52, "Bird Repellents."

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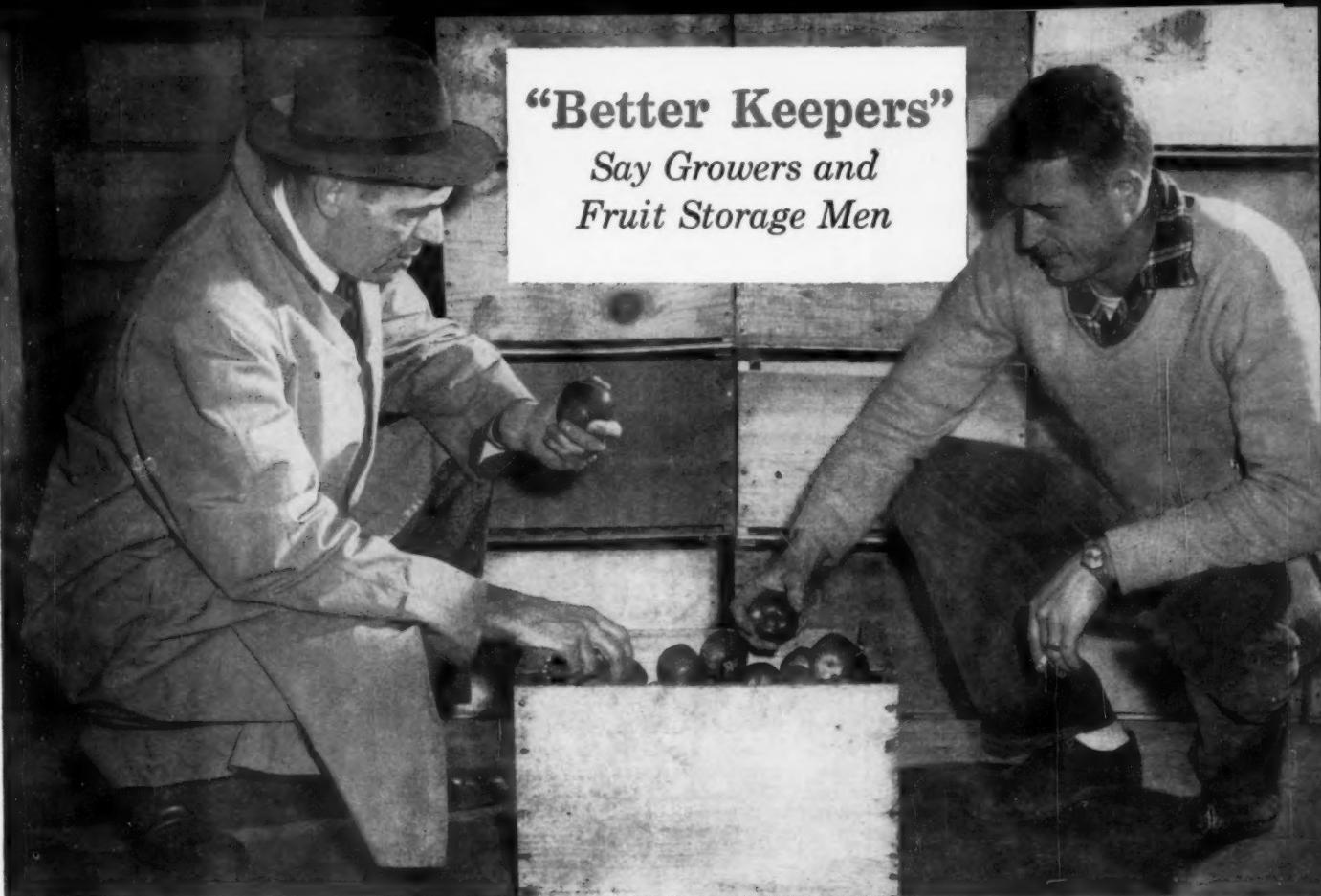
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Grapes

Reducing Freeze Damage

IN November, 1955, a cold front swept out of Canada and covered the lush fruit valleys of the Pacific Northwest.

Temperatures dropped to below zero in many areas where they had been near 60° for the past week. Nursery stock, orchard trees, and grapevines showed little signs of hardening for the approaching winter. In the Kennewick grape area, 75 to 100% of the primary buds were killed in most vineyards. Damage to secondary buds, canes, and trunks was severe.

On Thanksgiving Day, 1950, a similar freeze in Michigan caused incalculable damage to orchards and vineyards.

Armistice Day of 1940 is remembered as the day when freezing cold swept over the plains and valleys of Iowa, Missouri, and Illinois, killing and injuring fruit trees and grapevines.

Before that, freezes in October and December, 1909, killed half of the fruit buds in Concord vineyards in the Fredonia, N.Y. area.

On October 10, 1906, grapevines were killed to the ground along the shores of Lake Michigan near South Haven.

These freezes all occurred in crop years that were alike in at least two respects: 1) Yields were heavy, 2) Growing seasons were late.

The 1955 crop of grapes was the largest ever produced in the state of Washington (48,600 tons). This was in a year when the grapes bloomed two weeks later than normal, the growing season was abnormally cool, and harvesting continued into early November. The same type of conditions existed in Michigan in 1950, and the yield was some 30% higher than average.

Prof. F. E. Gladwin reported that the 1909 freeze damage in New York could be traced to the lack of maturity of the tissues resulting from a year of unfavorable climatic conditions and heavy yields, followed by unseasonably low temperatures.

The question is often asked: "What can be done to avoid or reduce damage to grapevines if and when these early freezes occur?"

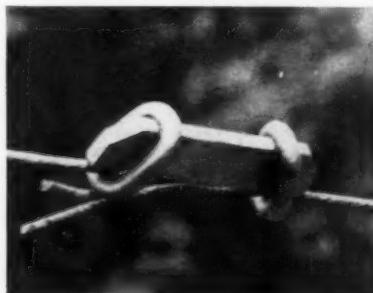
Cultural practices can be followed which will make for maximum early maturity of wood, buds, and fruit, thus reducing the possibility of severe damage from freezing temperatures. Proper pruning, good trellising, adequate and balanced nutrition, sufficient moisture supply, right type of

soil management, and good pest control are of primary importance.

Insufficient pruning usually results in too much fruit for the amount of available foliage, and the vine cannot adequately produce enough carbohydrates to properly mature both the wood and fruit. Too much pruning and fertilizer may cause too much vegetative growth late in the season.

A weakened vine is more subject to cold injury and is often the result of low fertility or deficiency of a nutrient. Cold injury may be the result of a moisture deficiency in the spring or too much water in the fall. Rapidly growing spring cover crops may seriously compete with the vine for moisture and nutrients, whereas cover crops planted in July or early August may provide the competition needed to mature the vines before cold weather, particularly those with light or moderate crops.

Low temperature damage will always be a possibility in the grape vineyards of America. In most cases, vineyards properly cared for will be prepared; secondary buds will grow when the primary buds are killed. New shoots will replace injured canes, and new sprouts will replace injured trunks.—Paul Larsen, Michigan State University.



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A simple yet ingenious wire-tightening device is a boon to grape growers. Invented by Fred H. Willits, East Middle Rd., North East, Pa., the "cinch" eliminates tedious twisting and rewinding wire around end posts. Wire is tightened, then cut and the cinch fixed to hold wire tightly and simplify all future adjustments. The gadget is now being marketed by Willits.

THE newly-formed Penn-Mar Container Corporation, Philadelphia, Pa., has purchased assets of Fibreboard Products (Eastern Division) Inc. (Philadelphia, and Baltimore, Md.). Announcement of the purchase was made by Dana F. Nelson, president and treasurer, and Fred P. Glose, vice-president, owners of Penn-Mar, who are former vice-presidents of the Fibreboard division.



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CHERRIES

Hardy Tree Needed

THE November, 1955, freeze which occurred in the Yakima Valley, combined with the low temperatures of January, 1956, might be classed as the worst in a generation.

It was roughly estimated that 75% of the bearing surface of sweet cherries was destroyed by the '55 freeze. This fact was borne out by the extremely short crop in 1956. In addition to the loss of bearing surface on older trees most of the non-bearing trees were killed to the ground.

Many of the older sweet cherry trees in eastern Washington had suffered trunk injury as a result of low temperatures in January-February, 1950. The 1955 freeze finished off most of these trees. Now the bearing cherry trees are in the intermediate age, many with only a partial top as a result of the die-back from the fall freeze.

There are few of these intermediate-aged trees that can be considered permanent. They continue to show dead limbs each year, although the '57 crop was much better than expected on these crippled trees. Most growers are attempting to replace old trees. Many growers report that they are discouraged in trying to replant in old

old Mazzard root, they say, is too vigorous. The young tree doesn't bear until it is over six years old and soon gets out of reach unless pruned back severely. The Mahaleb root has given some relief but generally is not favored in eastern Washington. Growers say it dwarfs out after a few years of production.

There is need for a sweet cherry tree with winter resistant trunk and crotches. Except for the '55 fall freeze, most of our injury to sweet cherry trees in eastern Washington comes in the form of trunk, crotch, and crown injury. If this could be overcome, and at the same time a smaller or dwarfish tree could be obtained, the answer to our problem would be partially solved.

We need to know more about the compatibility of sweet and sour stocks and the length of time that they will hold up. I have worked sweet cherry on Montmorency sours with apparent success, gaining both hardiness of trunk and crotch as well as getting early production. Varieties used include Bing, Lambert, Van, Sam, and Late Duke. All trees are extremely vigorous but were in good production by the fourth growing season.

There has been an active interest in the Van sweet cherry since the '55 freeze. This British Columbia cherry has proven to be tree hardy, early bearing, and resistant to rain cracking. The two questionable features are heavy setting with possible small size and a shorter than usual stem, which could complicate the picking with stems for fresh fruit.—W. A. Luce, Yakima, Wash., Ext. Agrt.



Sweet cherry tree severely killed in top during 1955 freeze has sprouted vigorously along trunk, produced a commercial crop in 1957.

soils, and are having only moderate success on new land. Some are considering new methods of starting the young cherry after planting.

It is being suggested by some that a severe heading back, say to about 4 to 6 inches above the bud, would be the best way to start a young sweet cherry tree. This would require staking unless extreme clean cultivation is practiced.

There also are some growers who would like to grow a smaller tree. The

PEACHES

How Much Nitrogen?

MOST peach trees need to be fertilized with nitrogen. The amount, however, varies widely.

Factors to be considered include age of tree, type of soil management, character of soil, climate, pruning practice, the market for which fruit is being grown, and effectiveness of pest control.

It is sometimes forgotten that fertilization is only one of a group of inter-acting cultural practices concerned with maximum performance of the tree.

These factors cannot be covered in detail here, but some can be considered briefly.

Assuming an adequate supply of water and other nutrients, the



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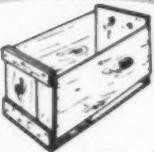
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amount of nitrogen required will increase with the age and size of the tree to full bearing. Thereafter, little increase will be needed.

An infertile or shallow soil is likely to have poor nitrogen-supplying power. A soil having a high reserve of organic matter is likely to produce more available nitrogen over a period of years than one low in such reserves. And a soil of light texture is more subject to loss of nitrate by leaching than a heavier soil.

A specific peach variety seems to require more nitrogen for maximum performance in a climate having high summer temperature and high light intensity than in a cool area with lower light intensity.

Severe pruning will limit the number of buds and reduce the need for nitrogen. Peaches for the early fresh fruit market will normally be grown with a lower level of nitrogen, for earlier maturity than those grown for canning, where time for maturity is a minor factor.

Trees suffering from attacks of certain diseases or insects fail to respond to applications of nitrogen even though they are in a low nitrogen status. Until such limiting conditions are corrected, it is impossible to regulate the nitrogen supply properly.

Our best criterion of nitrogen status is appearance of the tree. It may be supplemented by leaf analysis. Actual rates per acre will only be found by experience in the particular orchard being treated.

If we have a bearing tree, the first requirement is replacement of fruiting wood. Shoots 15 to 24 inches in length provide suitable bearing surface. Enough of these should be distributed over the framework to give a full crop. If growth is less than this, more nitrogen is indicated. If leaves are small and pale, nitrogen deficiency is suggested.

Another symptom is a high percentage drop of flowers. In cases of extreme nitrogen deficiency, leaves may develop small dead spots surrounded by reddish areas. Widespread practice is to apply about one ounce (equivalent to five ounces of ammonium sulfate) to one-year-old trees and progressively more to a maximum of 25 ounces to large trees which show marked deficiency.

However, nitrogen use can be overdone. Symptoms are excessive vegetative growth, continuing late in the season; large, dark green leaves, and late maturing, often under-sized fruit. Color development is slight or absent, and the flesh is low in sugar and aroma.

Attempts have been made to prescribe amounts of nitrogen needed

by soil analysis. Neither nitrate, which is in constant change in the soil, nor total nitrogen has given a good correlation with tree behavior. The perennial character of the tree, and the cumulative effect of earlier practices may account for this.

Prescribing nitrogen amounts by leaf analysis requires careful interpretation. The nitrogen content of leaves is high in spring and decreases rapidly at first. Throughout the remainder of the season there is usually a steady drop in percentage of dry weight.

Time of sampling is, therefore, of prime importance. Sampling procedure must be in accord with that used by the one whose standards are being used. It seems unlikely that the same percentages which define deficient or excess nitrogen status in one district would be applicable in another. More work on determining the limits to be expected and their correlation with response is necessary before we can rely on this method.—E. L. Prochsting, University of California.

PLUMS

Two Fruit Crops

PEACH growers around the Jacksonville-Tyler area of East Texas have found production of Bruce plums in most years to be a profitable addition to their fruit growing.

J. C. Earl, Rt. 3, Jacksonville, grows 55 acres of plums along with 150 acres of peaches. "The business expanded rapidly the first few years,



Plums ready to be shipped to fresh fruit markets. It costs an average of \$2.40 to pack, freight, commission a lug of plums to market.

but is now leveling off," he explains. He does not expect a substantial increase in plantings during 1957-58 because of a drop in the market for Texas plums when a crop running five days late bumped headlong against a California crop that came on the market about 10 days earlier than usual.

Earl uses the combination facilities of a roadside stand with outlets of three plum packing plants. In addition, he can sell some of his crop

to a preserving plant in Houston. Or, he can put his plums in storage waiting for improved market conditions.

Earl prefers a level sandy soil, although the crop does well on other farms where the land is slightly rolling. Ordinarily, there is ample rainfall to make a good crop.

To obtain the best prices, Earl strives for earliness in the crop and for substantial size, at least 1½ inches in diameter.

Trees are purchased from local nurseries set 18 x 18 feet. "I don't like to intercrop in my plum orchards," says Earl. "It's too difficult to cultivate a planted crop without skinning the trees."

Earl uses fertilizer at the rate of 4 pounds of 8-8-8 per tree on the first application, followed by 2 pounds of 5-10-5 and 2 pounds of nitrate of soda.

"I prefer medium pruning for large plums and heavy tonnage, and I like early pruning just before Christmas," Earl reveals. "Late pruning runs the risk of reduced yields if limbs becoming green are cut." East Texas growers consider light pruning as scattered tipping of branches and removal of broken limbs.

The recommended spraying schedule is ½ pound of 50% wettable diethyldrin, 6 pounds wettable sulfur, and 100 gallons water applied when blossom petals have fallen. A second application of the same material is applied 7 to 10 days later; a third application, 10 days later. The fourth application, 6 pounds wettable sulfur to 100 gallons water, is made 2 weeks after the third application, and the fifth application, same material as the fourth, about 10 days before harvesting.

"Growers received a range in price from \$4.21 down to as low as 46 cents a lug," says Carrothers of the Jacksonville firm of Simmons and Carrothers. "The average net received by the grower was \$3.00 a lug or \$6.00 per bushel."

Each lug contains a net of 24 pounds of plums. These lugs are used in shipping to northern fresh markets. For local markets, the half-bushel baskets are used, and plums going to canning plants are shipped in bushel baskets.

Marketing season for plums begins the first part of May and extends for about 3 weeks. Then come the early, middle, and late varieties of peaches to extend the fruit marketing season to the middle of August.—A. B. Kennerly.

The Bruce plum has some oriental parentage, being a cross of *Prunus salicina* (Japanese) with *Prunus austrofolia* (wild plum). It originated in Texas, where it was developed in Donley County.—Ed.

FEBRUARY, 1958



MODEL HS

Streamlined BUFFALO TURBINE Sprayer for Profitable Concentrate Spraying of Orchards and Row Crops

In talking to growers who have converted to Buffalo Turbine concentrate spraying, everyone reported an increase in profits and a decrease in maintenance costs. An apple grower in New York State who grows more than 30,000 bushels uses a high-velocity Model H Buffalo Turbine Sprayer. Result: his apples are 95% U. S. Fancy, 98% scab free. He says, "In my opinion, the Model H Buffalo Turbine Sprayer is unusually well engineered . . . by spraying steadily with the turbine we get over a lot of ground". He uses 8 x concentrate and does most of his spraying at night.

Increased Profits on Row Crops

Buffalo Turbine Concentrate Sprayers are equally successful on row crops. Users everywhere are enthusiastic in their reports of greater yields and higher profits. "We had 20 acres of tomatoes that yielded 11 and 12 tons to the acre . . . sprayed 5 to 6 times . . . 10 gallons of spray to the acre . . . covered 5 acres in 15 to 16 minutes."

Buffalo Turbine also builds machines that will Turbo-Dust and Turbo-Spray — separately or both at the same time. The powerful "Axial Flower" Blower produces velocities from a gentle breeze to 180 MPH moving 14,000 cu. ft. of air per minute.

Learn how little it costs to spray your way to better crops and better profits. Fill in and mail this coupon today.



Model HS spraying an orchard. Turbulent air atomizes and supplies spray with excellent foliage agitation and wide coverage.



Model HS spraying beans. Note long carry and perfect pattern control with one-man operation.

BUFFALO TURBINE AGRICULTURAL EQUIPMENT CO., INC.
67 Industrial Street • Gowanda, N.Y.

Tell me more about concentrate spraying, and Buffalo Turbine Sprayers.

Name _____

Address _____

City _____ Zone _____

State _____

BUFFALO TURBINE
AGRICULTURAL EQUIPMENT CO., INC.
67 Industrial Street • Gowanda, N.Y.



modern farming's **NEW** pace-setter



NOW

3 GREAT ALL-WORK TRACTORS WITH THE GENUINE FERGUSON HYDRAULIC SYSTEM

The all-new, 4-plow MF65. Here is the first big tractor with the Ferguson System that gives you exclusive 4-way Work Control. You get selectivity and flexibility in tractor power and implement control never before possible in this power class. With its big equipment mounted, the new MF65 is as maneuverable and easy to handle as a light tractor. You have to drive it to believe it. Get the feel of the new MF65 at your Massey-Ferguson dealer's soon!

The de luxe 2-3 plow MF50. Here is all the work performance, maneuverability and handling ease provided by the Ferguson System with exclusive 4-way Work Control, now in a 2-3 plow tractor available in 4 models, designed for front mounted cultivation. Now at your Massey-Ferguson dealer's.

The world-famous 2-3 plow Ferguson 35. This is the world's most popular and most copied utility tractor engineered years ahead of all its imitators to save your time and money. It provides all the advantages of the Ferguson System with 4-way Work Control, in an economical utility tractor!



Engineered for all work on all farms



ROW CROP WORK—One of the three MF tractors is for you, depending on your acreage. Engineered to operate rear or front mounted cultivators with new precision. On MF65 and MF50, your choice of front wheels, and power-adjusted rear wheels from 55" to 88", as standard equipment. Ferguson 35 has also been a favorite for row crop work for years.



FRUIT GROWING—Highly maneuverable MF tractors with 4-Way Work Control are ideal for all work in orchards, groves, vineyards, berries. You can do real close work in and around trees with plow, cultivator, disc. PTO for all spraying at the right speed. You can build a portable platform on the lower links of the Ferguson 3-point hitch for light hauling.



PLOWING—There's no tractor like an MF tractor for plowing any type of soil. 4-Way Work Control raises, lowers plow—maintains positive depth—at the touch of a finger. Traction increases automatically as needed. Plows into corners and around contours with amazing ease. There's a Massey-Ferguson tractor exactly right for your operation.



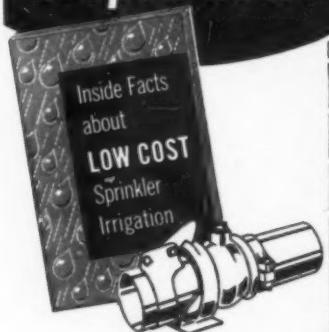
Now it's

MASSEY-FERGUSON

MASSEY-HARRIS-FERGUSON, INC., RACINE, WISCONSIN

World's most famous combines and the only tractors with the Ferguson System.

**Send this
coupon now!**



New Booklet tells
the INSIDE FACTS about

LOW COST Sprinkler Irrigation

Don't be fooled. Be sure you get what you pay for! A sprinkler system can be your most important farm tool!

Remember, your initial cost is not your *only* expense. Get *all* the facts before you buy.

Find out why you get a better deal with a full line of SHUR-RANE valves and fittings...why SHUR-RANE is actually the most economical and versatile sprinkler system you can buy.

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SPRINKLER IRRIGATION



Putting Ideas to Work

**John
Bean
Division**

SHUR-RANE Department AFG-1
FOOD MACHINERY & CHEMICAL CORP.

Gentlemen: Please send me your new booklet, "The Inside Facts About Low Cost Sprinkler Irrigation." I would also like to receive information on:

- Grains Cotton Corn Orchards
 Produce Pasture Fertilizer Row Crops

Name _____

Address _____

City _____ State _____

Farmer _____ Student _____ Other _____

Mail to nearest JOHN BEAN DIVISION factory
San Jose, Cal. Orlando, Fla. Lansing, Mich.

Apples—Pears

Magic Solutions

A SOLUTION that produces a pear crop on young D'Anjou pear trees and a spray that colors C-grade apples to Fancy or Extra Fancy is currently under test by two Yakima Valley, Washington, men.

Bill Stobie, Jr., an Ahtanum district fruit grower, marketed over 2000 boxes of D'Anjous picked from a 5-acre tract of 14-year-old trees last fall.

Verl Woods, president of Woods Industries, Inc., doing business as Crop King Co., of Yakima, received reports from a dozen apple growers that indicate a possible 30% increase in color on apples sprayed with his coloring formula.

With the help of Carl Hopkins, agronomist, Stobie prepared a solution based on boron.

The fruit producing formula was applied three years ago to pear blossoms when at their peak. That fall,

icals, then formulate these into a wettable spray powder. This patented formula is then applied at the rate of 10 pounds to 400 gallons of water to the acre. The coloring solution works best on apples already colored and can be applied with any sprayer."

Cameron devotes all of his time now to handling the activated charcoal filters that collect the apple essence. Crop King Co. purchases the essence from Cameron and fractionates it for production as a coloring powder.

Woods emphasizes his coloring solution is still in the experimental stage.—Jack R. Whitnall.

Job-By-Job Pruning

WHY wouldn't it be a good idea to prune the mature apple blocks this spring on a sort of job-by-job basis?

Operation 1. When it's cold and disagreeable, use a sharp pair of loppers to remove all the small branches and hanger wood that can be reached from the ground. This practice applies mostly to the inside wood that now produces small, poorly colored fruit. This grade of apples is a liability rather than an asset. In addition, the fine wood prevents the spray material from sifting through to the opposite side of the tree and the fruit is a haven for aphids and leaf rollers. This type of wood removal applies *only* to mature trees.

Consider the possibility of heading back the lower branches to give more space between trees, produce vigorous fruiting wood near the heading-back cut, and promote better, faster spraying.

Operation 2. Send the pruning crew through the same block the second time with directions to remove a 2- or 3-inch limb in the center of the north, east, south, and west sides of the tree. Much of the present day spraying is a broadside operation. Mature trees should be opened up so that the spray mist is not all blocked by a solid wall of foliage over the entire lower half of the tree. Center the attention of the pruning crew on one phase of the pruning operation at a time, more or less like factory piece work.

Operation 3. Finish up the pruning job. Those "umbrella" branches in the center tops of the trees always have and always will be troublemakers, insect catchers, apple scab



Bill Stobie, Jr., applied his new solution to 14-year-old tree for bumper crop of D'Anjous.

Stobie harvested 1400 boxes of pears, and the following year, 1200 boxes.

"Three factors are necessary for this solution to work," Stobie pointed out. "Good growing weather, plenty of pollinizers, and plenty of bees."

Stobie is planning to market the formula this spring.

The coloring formula is explained by Verl Woods:

"Rex Cameron, a Yakima research chemist, and I perfected an activated carbon air filter, which we sold to warehousemen throughout the valley. When we re-activated these filters we obtained a non-water soluble liquid which we call 'apple essence.' This liquid has a strong, permeating, ripe apple odor, and is cider colored."

"For five years we've been experimenting with fractions of this 'essence.' Now we remove certain chem-

Resistant insects... now a spreading problem

**DDT and DDD-tolerant pests highlight
importance of phosphate insecticides**

*A service advertisement
prepared by the manufacturers
of malathion insecticide.*

WHILE COVERAGE and timing problems still account for much poor control, resistant insects are becoming responsible for a greater percentage of control failures.

In 1954, resistant codling moth appeared in the Midwest. It has now appeared in other apple growing areas. In the last three years, DDD-resistant red-banded leaf roller has spread through New York State. Infestations in 1957 were particularly severe.

Photo courtesy N.Y. State Agricultural Experiment Station.



Switch to phosphates

To control these adaptable pests, growers have switched to the phosphates . . . particularly malathion. In New York, for example, malathion controlled both broods of resistant red-banded leaf roller, with two applications for each brood. Where these sprays overlapped codling moth cover sprays, codling moth too, was controlled.

Other advantages

A malathion-based schedule offers additional advantages. It controls aphids, mites, plus other major fruit pests. Its low toxicity to man and animals eliminates need for the respirator and protective clothing required when applying most other phosphates. It also eliminates residue problems in close-to-harvest insect control . . . application can be made on most fruits up to 72 hours from harvest. And many fine-finish programs specify malathion because it offers a wide margin of safety to fruit and foliage of sensitive apple varieties such as McIntosh and Cortland.

Formulations

Malathion formulations are available under the brand names of many well-known manufacturers. The basic chemical was developed by American Cyanamid Company, Phosphates and Nitrogen Division, New York 20, New York.

Red-banded leaf roller damage. Malathion controls both first and second broods of this resistant pest. Use two sprays for each brood.

"TOUGH" Cuts slow you down?

... get **SPEED** with PORTER PRUNERS

You can take every cut in stride with PORTER PRUNERS, keep moving right along . . . even in tight crotches or on the hardest wood. They cut faster, cleaner, easier . . . permit closer, quicker-healing cuts in every pruning operation. Besides the pruners shown here, there is a complete line of PORTER POLE PRUNERS, both pulley and non-pulley types. All PORTER PRUNERS are fine quality tools with heat-treated, tool-steel blades. They stay sharp longer . . . give you trouble-free service.

FORESTER Heavy-Duty Brush Cutter



Type QP Pruner
with Short Arm and Pulley



A rugged, lightweight pruner that's invariably the choice for cutting thick growth in orchards and in shade and ornamental trees. Narrow head slips easily into difficult crotches . . . two sharp alloy tool-steel blades cut quickly—without damage to bark. Cuts heel from both sides. Available in lengths of 8', 8½', 10' and 12'. Capacity: 1" green wood.

The only pruner with exclusive "Power Shift." Instantly provides that extra cutting power needed for difficult cuts—with just a flick of the handles. Tops for root-cutting, low-height pruning, and general brush clearing. Easiest, quickest way to get clean, close cuts. Two capacities available: 1½" or 2" green wood.

Pointcut Pruner

This fast, trouble-free pruner is a favorite in orchards and nurseries. Gives a comfortable grip and a long, easy "reach". Special, shear-type blades easily handle capacity cuts in throat—yet neatly nip off sprouts or suckers at points with minimum handle spread. Two sharp blades help cuts heel from both sides. Blades and handles of heat-treated, alloy steel. Length 20" or 24". Cutting capacity: 1½".



WRITE FOR FREE ILLUSTRATED CATALOG

H. K. PORTER, INC. SOMERVILLE 43,
MASSACHUSETTS

hideouts, impossible to spray thoroughly and hectic to pick.

Saw them out, even if they are 5-to 6-inch branches. Leave a stub 3 feet long—don't close-cut or bench-cut. You're not pruning for looks. Get some sunlight and ventilation into the centers of the trees. Remember that Pacific Northwest growers have two and one-half times the light intensity that we have in the Central West, and still they open up their mature trees much more than we do. Utility grade apples no longer are profitable. Let's let more sunlight into our trees and try to produce a few less bushels, but a higher per cent of U.S. Fancy fruit!

This is the last article written for AMERICAN FRUIT GROWER by C. L. Burkholder, Purdue University Agricultural Experiment Station, before his untimely death. Another contribution dealing with spray thinning of peaches will appear in the March issue.—Ed.

Sprayer Conversion

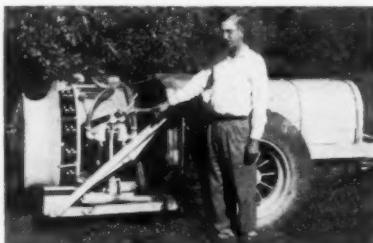
WHEN R. W. Winkler, apple grower of Sebastopol, Calif., built his own air-blast sprayer in eight hours with a do-it-yourself kit and an old tank and trailer, he saved himself almost \$2000.

After spraying with it for a full year, Winkler states that the 30-inch axial flow fan does a good job on his large trees.

"We produce about 400 tons of Gravensteins a year," explains Winkler. "To pay \$5000 for a sprayer takes a lot of profit for several years.

"Even some of the large growers around here are putting together their own sprayers as I did. It gives them two machines instead of one. Then they can spray in two places at once, or twice as fast.

"My tank is smooth inside. Heavy caustics, alkalies, and acids in the



R. W. Winkler attached a complete Bes-Spray air blast unit to old tank and trailer.

spray chemical do not harm it. I'm not off and on the tractor a dozen times a day cleaning out scale caused by flaking of paint."

To attach his air sprayer, he bought old angle iron from a junk yard and used it to complete the entire assembly. He points out that the kind of air spray attachment that he bought is a complete air carrier sprayer—less tank and trailer. He did not need to use the worn-out engine



NEW VARIETIES FOR 1958

STARKEARLIBLAZE APPLE
New, bright red, high quality, firm summer apple (ripe week before Wealthy) will pack and ship just like fall and winter varieties.

STARKEARLIGLO PEACH
New, early maturing bud sport of Redhaven—ripe 10 days earlier—sizes well with early thinning.

Pilot Plantings (in Commercial Orchards) Prove Stark Dwarf Apple Trees

Are The Answer To
★ QUICKEST PRODUCTION
★ EFFICIENT USE OF LAND
★ LOWEST LABOR COSTS
★ LARGER, FINER FRUIT

Stark Bro's have now increased the propagation of dwarf trees to permit us to offer them in larger commercial quantities at lower prices. Write for these special prices today.

and The Best Standard Fruit Trees Too

Insure Future Profits By Using Genuine
"Record Bearing Strain" Stark Trees.

Write for our latest catalog and commercial prices on Stark Certified "Virus Free" Fruit Trees.

An early reservation will protect you.

STARK BRO'S

NURSERIES & ORCHARDS CO.

Dept. 128—Louisiana, Mo.

Largest in the World—Oldest in America

now approved
for use on fruit

DAZINON

apples

GEIGY DAZINON provides outstanding control of Apple Maggots and Codling Moths including those Codling Moths resistant to chlorinated insecticides. Effectively controls Green Apple Aphids, Woolly Apple Aphids, San Jose and Forbes Scale Crawlers. Diazinon also suppresses Mites.

controls a wide variety of fruit insects

—CAN BE APPLIED UP TO
14 DAYS BEFORE HARVEST
ON APPLES AND PEARS
—UP TO 10 DAYS BEFORE HARVEST
ON CHERRIES

cherries

GEIGY DAZINON gives positive control of Cherry Fruit Flies . . .

pears

GEIGY DAZINON effectively controls Codling Moths and Pear Psylla, Aphids, San Jose and Forbes Scale Crawlers. Diazinon also suppresses Mites.

GOOD NEWS FOR GROWERS. Now you can control practically all the major fruit pests on apples, pears and cherries with GEIGY DAZINON—including certain insects which are difficult to control with other insecticides. Ask your farm or orchard supply dealer today for GEIGY DAZINON 25W (25% wettable powder). May be used alone or in combination with 50% wettable DDT. Follow label directions.

Residue tolerance for Diazinon — 0.75 ppm

ORIGINATORS OF



DDT INSECTICIDES

GEIGY AGRICULTURAL CHEMICALS
Division of Geigy Chemical Corporation
Saw Mill River Road • Ardsley, New York



Actispray*

SOLUBLE ANTIBIOTIC TABLETS

Actispray, the new antibiotic fungicide, effectively controls leaf-spot disease in both sweet and sour cherries. Since it may be applied up to 4 days before harvest, its protective action lasts through the harvesting period.

ACTISPRAY—

Acts rapidly Actispray kills the established fungus within one hour after spraying.

Kills the established leaf-spot infection By actual test Actispray is one of the most effective leaf-spot eradicants. This eradicative action provides for long term protection.

Keeps trees healthy Once Actispray removes the burden of the leaf-spot fungus, the tree



effective
leaf-spot
eradicant
before
during and
after harvest

becomes more vigorous and should be able to form more fruit of higher quality.

Easy to use Simply drop the easily dissolved tablets into the spray tank with agitator running, then spray.

Economical Just one tablet added to 100 gallons of water makes enough 1 ppm solution to treat 25 trees. Every drop of the solution is active.

Does not stain...leaves no visible residue Actispray is also recommended for non-bearing trees, nursery stock, and transplanted trees one to two years old.

Actispray antibiotic tablets are supplied in convenient glass tubes, 24 tablets to a package.

*TRADEMARK, REG. U.S. PAT. OFF.

Upjohn

Actispray is a product of

THE UPJOHN COMPANY, CHEMICAL SALES DIVISION, KALAMAZOO, MICHIGAN

or pump of the old sprayer since this attachment includes pump, engine, valves, and strainers all fully assembled.

"It's equipment," he states, "that has proven itself for years as the Bes-Spray air carrier sprayer (Besler Corporation, Oakland, Calif.)

Winkler welded an angle iron frame onto the rear of the old sprayer frame. Then he hoisted the air sprayer attachment from a tree, drove the old trailer under it, and welded them together. The wheels were moved from the middle of the tank until two-thirds of the tank was forward of the wheels. This gave him the correct balance, and he can manually swing and lift the drawbar to hook onto the tractor without the use of a jack.—George Svenson.

Insurance Varieties

TWO apple varieties that bloom late, and at the same time, are introductions of Missouri Agricultural Experiment Station. In Missouri, the late bloomers are thought of as insurance varieties.

Grove, introduced nine years ago, is a cross of Ingram by Delicious. Fruit is attractive, medium to large in size, of good quality (not quite as good as Delicious), an excellent keeper, and has the ability to color well at least two weeks before ripening, which normally is soon after Winesap. Fruit buds do not open until about 10 days after Delicious blooms. Grove needs to be cross-pollinated.

Jonagram, a product of Ingram by Jonathan, was named and introduced in 1955. Jonagram ripens

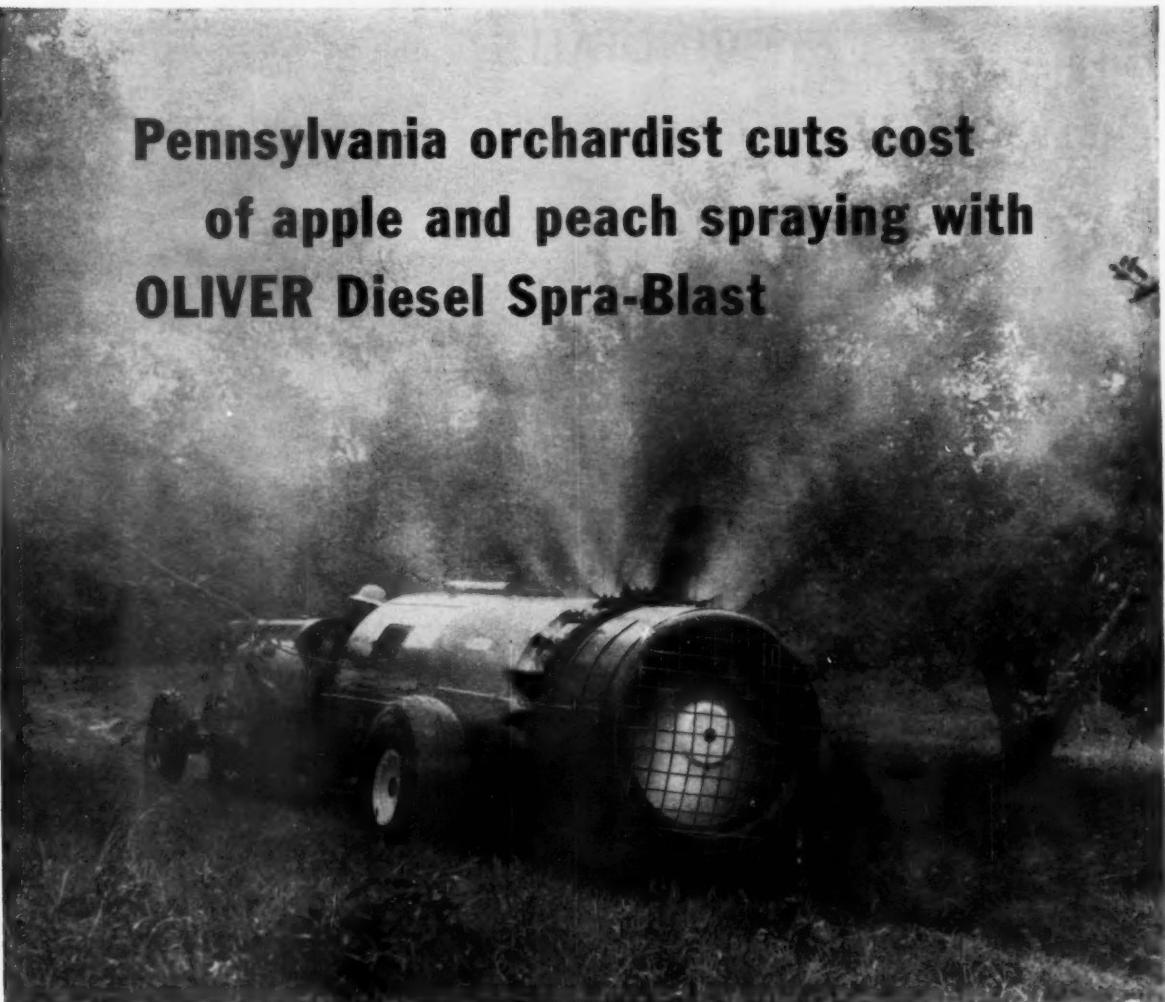


Jonagram

about with Jonathan. However, it is larger, nearly solid red, but not quite as dark red as Jonathan. Quality is good but not as good as Jonathan. Storage season is somewhat longer than Jonathan. Blossoms are self-fertile, and the tree has a tendency to bear at a younger age than most varieties.

Jonagram is a good pollinator for Grove.—Paul H. Shepard, Missouri State Fruit Experiment Station, Mountain Grove.

Pennsylvania orchardist cuts cost of apple and peach spraying with **OLIVER Diesel Spra-Blast**



"I bought an Oliver diesel orchard and grove Spra-Blast because it reduces my spraying costs...uses only 1½ gallons of fuel an hour...gives excellent yields of apples and peaches with 1X and 3X concentrates. And I like the Tac-Hourmeter—no guesswork about how my sprayer is working."

Says: **Reno Apple**
Richfield, Pa.

Comments like these are coming from everywhere—from users of the new Oliver Model 500 Spra-Blast. Big diesel savings in both fuel costs and maintenance expense have been recognized. Equally impressive has been the quality of spray coverage provided by Oliver's new slow-speed, high-output fan. It sets a new standard of efficiency—38-inch true air foil design, putting out 68,000 cubic feet of air per minute at 1850 r.p.m.

Low-cost dependability is what orchard and grove operators want, and that's what they get in the Model 500—plus big diesel savings, full coverage regardless of tree height, easy-to-service pump, corrosion-resistant 500-

FEBRUARY, 1958

gallon tank, stable maneuverability and easy turning.

See your Oliver Iron Age dealer right away and get full particulars on the new money-saving Oliver Model 500 Spra-Blast. The Oliver Corporation, 400 West Madison Street, Chicago 6, Illinois.



OLIVER

"FINEST IN FARM MACHINERY"

Also Manufacturer of the Famous Oliver Outboard Motors

The Complete Corkboard INSULATION SERVICE

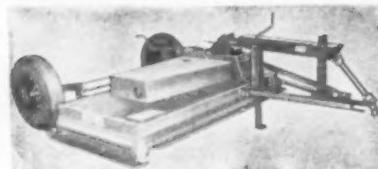
From engineering design to complete erection, United Cork Companies offers complete service on B.B. (Block-Baked) Corkboard through its chain of branch offices from coast to coast.

Each installation of United Cork Companies' B.B. Corkboard is specifically planned for the requirements of the individual fruit storage area. And each installation is followed up by United Cork Companies' engineers to assure full satisfaction to the fruit grower.

You are invited to discuss your low-temperature insulation requirements with us.

UNITED CORK COMPANIES
6 Central Avenue
KEARNY, NEW JERSEY
BRANCH OFFICES IN PRINCIPAL CITIES

"A real 'find' for prunings disposal"



Mr. Albert J. Livezey of Barnesville, Ohio, says of his 80" Wood's Rotary Cutter, "We have no exact record of time saved but we feel that at least half is saved. While we have had only one season's experience, we feel that for brush disposal in the orchard it is one of the 'finds' of our day. We have never, I believe, found anything about which we are so enthusiastic. Its use is not limited to brush removal. It's the 'cat's meow' for all orchard mowing."

As Mr. Livezey has found, Wood's Rotary Cutters are ideal for preparing all mowing, mulching and shredding anywhere on the farm.

25 MODELS—42" to 9½" Cut

Besides the 80" off-set model shown above, there is an off-set adapter package for the regular pull-type 80" model to provide both center and offset hitch. Also 42" under-mounted for Farmall Cub, Lo-Boy, Super A, 100, 130 and A-C G, 42" rear-mounted for Fast-Hitch Cub and Iso-Boy, 60", 21" and 80" rear-mounted for larger Fast-Hitch Farmalls (using 3-pt. adapter), 60" for A-C D-14 and WD-45, and all standard 3-point hitch tractors (Ford, Ferguson, Oliver Super 55, etc.) and Jeep. 60", 61", 80" and 114" drawbar pull-types for any 2, 2-3 and 3-4 plow tractors, and Jeeps. All have free-swinging blades.

B

SEND POSTCARD FOR FREE FOLDER

WOOD BROTHERS MFG. COMPANY
26802 S. 4th Street • Oregon, Illinois



By HENRY BAILEY STEVENS

Report on India NO doubt it would be best to go into a foreign country gingerly—to take a few steps at a time, look all around, and then proceed a little farther. That way you wouldn't be exposed to more than you could absorb.

Going to India to attend the vegetarian convention, I jumped in all over. Readjustments had to be made quickly to changes in climate, food, language, and customs, meanwhile taking into account the deep antiquity of the land and the current throes of the industrial revolution into which it is plunged. My own notes leave me a little dizzy.

Teeming Street Life A teen-age boy, naked except for a loincloth, lies stretched out with no sign of life on the sidewalk in the blazing sun. The traffic of a busy corner flows around him, paying no attention.

All sorts of business seem to be conducted on the sidewalk. Here a barber shaves a customer squatting

This article is the first of two installments on the author's trip to India where he attended the International Vegetarian Congress as a delegate from the United States Millennium Guild. —Ed.

on the curb. There a man busily makes sandwiches for sale. Another roasts nuts on a little stove. The shops in the bazaar are incredibly small. Yet, they seem well stocked.

The faces move by in never-ending variety, all colors and shapes. Many of the men are heavily bearded. The women have a delicate and quiet beauty. Wearing their colorful saris as though they were evening gowns, they move in a stately manner not disturbed even by a sizable burden on the head.

Poverty and disease are not hidden. A mother with a baby clutches at you pitifully. A little boy sidles alongside, chanting mournfully "No mama, no papa. Give baksheesh" and keeps it up for blocks. A basket-case invalid scrambles under feet for pennies.

Is there no organized charity? Yes, there are many such groups, you are told, working desperately

and advising "Do not give them money. You will only be encouraging them in their profession."

On the highway is the mixed traffic of clanging trams, automobiles, horse-driven carriages, bullock carts, trishaws propelled either by foot pedal or motor, many dogs, and an occasional cow, camel, or herd of goats. There is a combined stench of animals, automobile exhaust, smoke, and sometimes incense.

Advertisements are as blatant as in America, whether in English or Hindu script, but only the movies make their appeal on a grand scale with colorful broadsides.

Interesting Expressions of Art THE ancient temples have elaborate carvings, often on a gigantic scale. Some of the caves are mammoth galleries replete with statues cut out of the solid rock.

One morning at sunrise before the Taj Mahal I suddenly realized how facts, read years before and forgotten, could take on new reality. Those fitted blocks of marble, those matching domes, minarets, and reflecting pools are a memorial to Love that had vanished. Yet, after 300 years, one wonders whether the love is not still substantial. It does not seem the expression only of one couple.

At a music festival I sat one evening cross legged on a tarpaulin listening to classical Indian music, trying to understand its meaning. It rose and fell in stanzas that seemed to wail endlessly.

What appeals to me most is the Indian dancing. The teen-age performers are vibrant even to the fingertips. I watched a group of youngsters from Ruk Mini Devi's Kalakshetra school weaving in and out in an elaborate maypole dance.

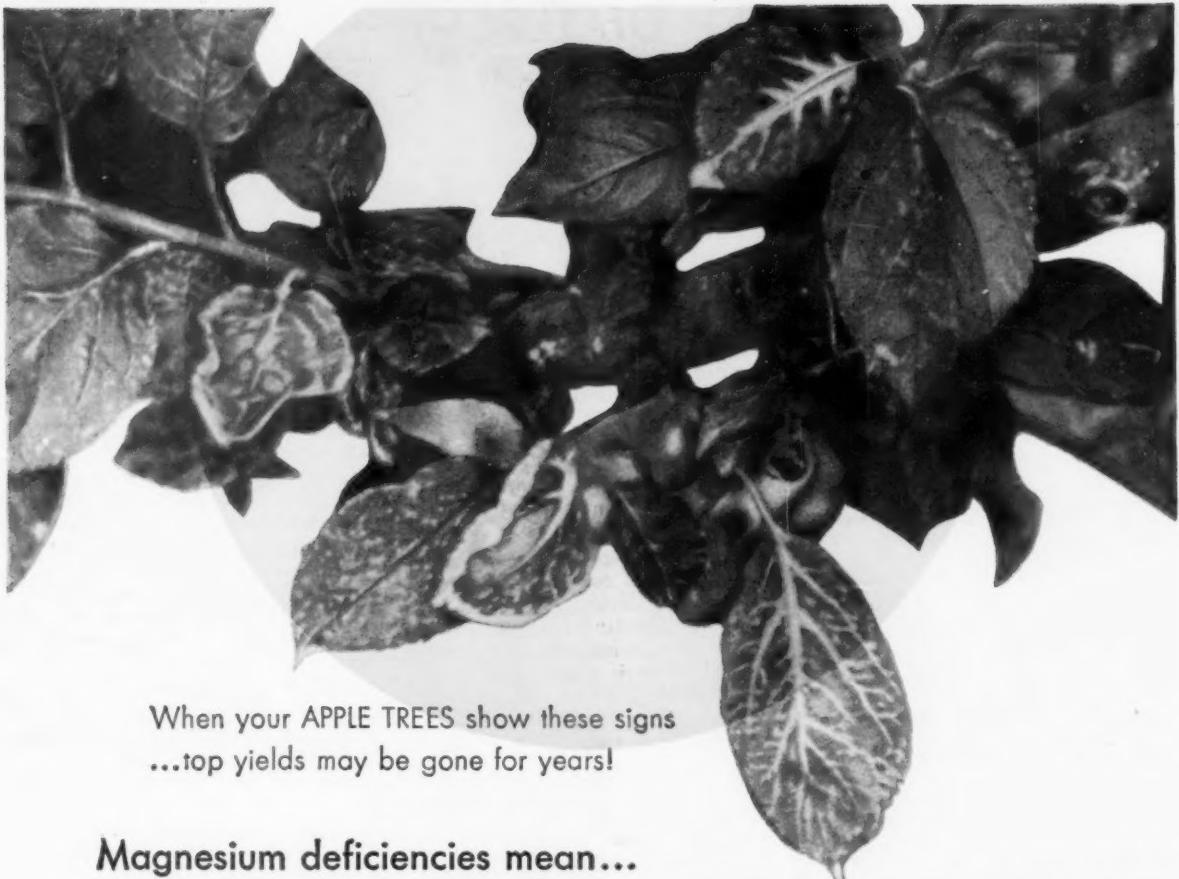
Hollywood stars, while well known, by no means have the field to themselves. India is producing her own movies successfully.

The Sacred Cow I do not propose to follow the example of the many visitors to India who have made fun of the veneration felt for the cow. If milk is such an important food as most Western people believe, is not its producer entitled to the claim of being the foster mother of our race?

Most people still recoil from the idea of eating horse flesh. Yet they think of beef as a prime meat food.

Indians are more sensitive; they shrink from cattle slaughter and would look with horror at a beef carcass in the market.

Address your "Windfalls" contributions to Henry Bailey Stevens, AMERICAN FRUIT GROWER, Willoughby, Ohio.



When your APPLE TREES show these signs
...top yields may be gone for years!

Magnesium deficiencies mean...
it's TOO LATE for TOP PROFITS

Magnesium deficiency danger signs on your fruit trees—indicated by blotchy, curling, yellowish-brown leaves—mean the damage is already done. Apple trees, for instance, may take as long as three years to recover—even when magnesium is supplied immediately after deficiency signs appear. Trees continue to form fruit of poor color and quality, to defoliate early, and to be susceptible to winter damage. Don't wait until this happens in your orchards, because then it's TOO LATE for TOP PROFITS.

Before signs of magnesium deficiency appear, apply readily-available, fast-acting, water-soluble magnesium, available in the form of Sul-Po-Mag®, in complete, mixed, premium fertilizers. Stop magnesium deficiencies before they start—with Sul-Po-Mag, also called SPM. An investment of just pennies per tree will guarantee both water-soluble magnesium and sulphate of potash—and give you fruit of better quality. Ask for premium fertilizer containing SPM.



Avoid magnesium deficiency symptoms like these in (left to right) peach, pear, and cherry leaves by applying a complete fertilizer containing Sul-Po-Mag.

THIS SEAL



IS YOUR PROOF
THAT FERTILIZER CONTAINS

Sul-Po-Mag®

Water-Soluble Double Sulphate of Potash-Magnesia
(K₂SO₄ • 2MgSO₄) 22% K₂O - 18% MgO

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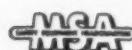


THE M-S-A FARM SPRAY RESPIRATOR

Here's the one Respirator that makes outdoor spray programs safer. New type filters keep users on the safe side of toxic sprays. Replaceable with in-use M-S-A Farm Spray Respirators. Accepted by U. S. Government Interdepartmental Committee on Pest Control. Write for details.

M-S-A GMC-1 INDUSTRIAL GAS MASK—For heavier mixing concentrations of all the above organic insecticides. "All-Vision" facepiece gives full facial protection—maximum vision.

DEALERS WANTED—Current customers are your best prospects. Cartridge and filter replacements mean repeat business. Write for details.



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ARIENS TRANS-A-MATIC—for heavy duty tilling. Two models for 20" or 28" tillage.

Write for free folder. Dealer inquiries invited.

Ariens / 139 Calumet St.
Milwaukee, Wis.

Citrus

Tristeza Curbed

TRISTEZA, a virus disease of citrus which threatened to destroy millions of orange and grapefruit trees in the United States within a decade, has not lived up to expectations of its severity. The malady which was first recognized in South Africa about 1900 has since spread to nearly every citrus producing area of the world and devastated plantings in some countries causing major adjustments in the economy of their citrus industry.

Tristeza (quick decline) is spread by plant propagation or insect vectors (several species of aphids). Only certain combinations of top and root and occasionally seedlings are susceptible to the disease; others may be infected but are symptomless carriers.

The disease first appeared in California in the Los Angeles area about 1940. The outburst was probably

from orchards in these areas even though the Meyer lemon is present.

In Florida most of the trees are budded on rough lemon root, but many orchards are still planted to trees on sour orange because of the better fruit quality it produces. An inefficient vector, *Aphis spiraecola*, transmits the disease in that state.

The practical solution to the problem appears to be the use of tolerant stocks and new plantings are being made on such roots. The probability of the virus mutating to a more virulent strain than those now present in California and Florida is possible. The industry also is threatened by the possibility of a more efficient vector such as *Aphis citricidus* from Africa or South America slipping through our quarantine barriers. Experiments are underway to immunize the trees against virulent strains of the virus by previously inoculating with a mild strain.—W. P. Bitters, Citrus Experiment Station, Riverside, Calif.

CALENDAR OF COMING MEETINGS & EXHIBITS

Feb. 4—Fruit Growers Day, New Hampshire Horticultural Society, Highway Hotel, Concord.

Feb. 5-7—Ohio State Horticultural Society convention, Neil House, Columbus.—C. W. Ellwood, Sec'y, Wooster.

Feb. 6-8—West Virginia State Horticultural Society 65th annual convention, Martinsburg.—Carroll Miller, Sec'y, Box 892, Martinsburg.

Feb. 10-12—Michigan Apple Growers and Storage Association, tour of market facilities in Appalachian Belt.

Feb. 16-19—National Peach Council annual meeting, Wade Hampton Hotel, Columbia, S.C.—Harold J. Hartley, Sec'y-Treas., 302 W. Walnut St., Carbondale, Ill.

Feb. 19-20—Manistee—Benzie Horticultural Society annual winter meeting and commercial exhibit, Armory Bldg., Manistee, Mich.—Earl McLeod, Ass't County Ag. Agent, Manistee.

Mar. 1—Peach Day, University of California, Davis.

Mar. 18-20—Western Weed Conference, Davenport Hotel, Spokane, Wash.

Apr. 11-18—15th International Horticulture Congress, Nice, France.—P. Chauzier, Sec'y, 84 Rue de Grenelle, Paris, France.

May 1-2—31st Annual Shenandoah Apple Blossom Festival, Mrs. Jean James Demorest, Publicity Director, Winchester, Va.

May 11-14—Processed Apples Institute, Inc., 7th annual meeting, Seaview Country Club, Absecon, N. J.

May 25-28—Super Market Institute, Atlantic City, N. J.—Institute headquarters, 500 N. Dearborn St., Chicago 10, Ill.

June 19-20—National Apple Institute annual meeting, Yakima, Wash.; June 21-22—tour—Truman Nold, Exec. Sec'y, Washington Bldg., Washington 5, D. C.

June 25-27—Entomological Society of America, Pacific branch, 42nd annual meeting, El Cortez Hotel, San Diego, Calif.

July 24—Pennsylvania, West Virginia, Maryland and Virginia state horticultural societies combined summer meeting, Moore and Dorsey properties, Berryville, Va.—John F. Watson, Sec'y, Staunton.

July 28-30—International Apple Association, Queen Elizabeth Hotel, Montreal, Canada.—Association headquarters, 1302 18th St., N. W., Washington 6, D. C.

Sept. 24-26—Florida Fruit and Vegetable Association 15th annual convention, Hotel Fontainebleau, Miami Beach.

Sept. 29-Oct. 1—Texas Citrus and Vegetable Growers and Shippers, Shamrock-Hilton Hotel, Houston.—Organization Headquarters, Harlingen.



Work horse-'58 style

New '58 Dodge Power Giants do a handsome job... are 4-way leaders of the low-priced 3

Here's a thoroughbred you needn't gentle . . . a new kind of truck that's built for action and looks it. And today's all-new Dodge *Power Giants* for '58 are even easier on your pocketbook than they are on your eyes. In fact, they lead the low-priced three in all four big ways that mean most to farmers.

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BLIZZARD BELT NUT TREES



Hardy Nut Trees of all kinds. Pecans, Almonds, Filberts, Thin-shelled Black Walnuts, Chinese Chestnuts and Carpathian English Walnuts. Write for Tree Catalog.

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HARDY NORTHERN NUT TREES

Pecan, Black Walnut, English Walnut, Butternut, Chinese Chestnut, and Persimmon trees. Hickory, Pecans, and Black Walnuts of both named varieties, and seedlings for eating or planting. Catalog and Price list free.

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Add to your income by selling AMERICAN FRUIT GROWER. Write today for our liberal nursery agents' plan. Address:

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NEW CARPATHIAN WALNUT

The tree find of the Century. Produces large delicious thin-shelled English walnuts. Perfectly adapted for cold winters: will stand 25° below without injury. Makes a beautiful fast-growing shade tree with tropical appearing foliage. Plant for shade and nuts.

DWARF FRUIT TREES—Ideal for home gardens, require little space but produce full size fruit second or third year after planting. Enjoy delicious home grown fruit from your own dwarf trees. We have dwarf peach, plum, cherry, apple, and pear.

NEW GRAPES—New Interlaken Seedless. Delicious, sweet, fine-flavored, entirely seedless. The crisp, meaty golden berries are just like California grapes but better quality. We have 17 of the newest and best varieties for commercial planting and home gardens.

NUT TREES. Something new for cold climates. Hall's Fruiting Almond. Hardy to 20-25° below zero. A beautiful ornamental tree covered with a mass of pink bloom in the spring. In the fall, you will harvest delicious almonds. We also have filberts, Chinese chestnut, Thomas black walnut.

MILLER'S FREE CATALOG also lists best blueberries, strawberries, all kinds of standard fruit trees, peach, apple, pear, plum, apricot, quince and nectarine. New everbearing peach. New everbearing pear, pears from August till October.



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Nuts

Pecans in the North

"THE most profitable land on my farm," is how Richard B. Best describes a tract along the lower Illinois River where he has topworked hundreds of native seedling trees with select varieties of pecans and pecan-hickory hybrids.

Best, Illinois' largest grower of improved pecans, finds the most productive pecans are a few of the so-called "Northern" varieties. These varieties originally came from native seedlings in midwestern areas, which have a minimum average frost-free season of 180 days and July average temperatures of 75° F. or more.

However, cool, short seasons result in fewer and smaller nuts, so the most northern part of the Midwest is out of the "Northern" area now under discussion. There are good varieties commercially promising for the lower Midwest, particularly in the roughly triangular region between Owensboro, Ky., Kansas City, and southeast Kansas, excluding the Ozarks.

The wild crop from the now reduced forest stands along the lower Ohio and Missouri rivers, and other streams from Indiana to eastern Kansas still contribute an estimated 2 to 4 million pounds of nuts to the national pecan harvest in a good year. Although their product is of good quality and finds a ready market with commercial crackeries, it usually is a small nut, particularly northward.

Selection among the best native trees, over a 45-year period, has given varieties adapted to midwest seasons that vie with older southern selections in thin shells, good crack-



J. Ford Wilkinson stands under a Major pecan tree he planted in 1915; tree bore 200-pound crop in 1957 and has produced 300 pounds.

ing quality, flavor, and regularity of crops under cultivation. Some early maturing midwestern pecans even approach in size the popular Stuart, which is too late maturing for any area but the southernmost parts of Illinois, Missouri, and southward.

Probably no man during this period has contributed more to midwestern pecan culture and variety selection than the still active J. Ford Wilkinson, of Indiana Nut Nursery, Rockport, Ind.

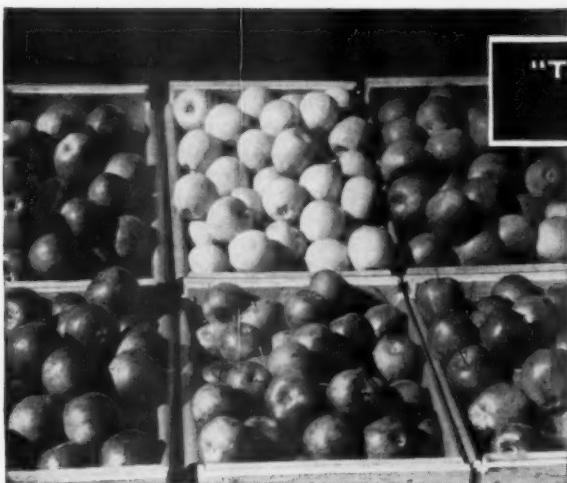
He has been topwork-grafting pecans since 1911, and was the first to bring several popular varieties into propagation. Among the first of these was the Major from western Kentucky, still the favorite in most "Northern" plantings. It has smaller nuts than most named varieties, but a regular crop of high quality nuts. From the same grove he started the Greenriver, a later, larger nut that does best in or near Kentucky.

He also did the first grafting of Giles, so far the preferred variety



SOLID lines with upright bars enclose area with average 180-day or longer growing season. "Northern" pecans mature best at lower altitudes here. BROKEN line indicates limits of 75° F. average July temperature. Few pecans will grow north of here, though "northern" trees are hardy to lower lakes. CROSSES indicate summer rainfall is likely to limit successful pecan growth west of this line. (Based on climatological maps in USDA Yearbook for 1941.)

From Du Pont... proven fruit fungicides that meet the need of every fruit grower!



"THYLATE"—for top disease control at a new, low price

• These six varieties were sprayed with Du Pont's new all-variety fungicide, "Thylate."

Du Pont Thylate® thiram fungicide, a proven fungicide among fruit growers, provides effective control of more apple diseases than any other registered fungicide. "Thylate" permits fine finish of all varieties, including Golden Delicious.

"Thylate" gives excellent protection against scab and rust... can be combined with mercury curatives for greater potency. "Thylate" is also highly effective as a buffer spray between sulfur and other summer fungicides.

Try "Thylate"—now available at a new reduced price to give economy-minded growers complete control of apple diseases—plus fine fruit finish.

"FERMATE" controls more diseases on more fruit than any other fungicide

Du Pont Fermate® ferbam fungicide is the most versatile fruit fungicide available... relied upon by growers for more than 16 years for effective disease control. It offers low-cost protection against scab and most other fruit diseases.

"Fermate" gives positive protection to apples, cherries, peaches, pears, raspberries, currants, cranberries, gooseberries, blueberries, boysenberries, blackberries, plums, prunes and dewberries.

Improve quality and bring down your cost-per-bushel disease control with "Fermate." Long-term tests have proven that "Fermate" promotes bigger yields... maintains orchard vigor.



• This McIntosh tree in the Davis Orchard, Bolton, Mass., has been protected against both scab and rust for 16 years with Du Pont "Fermate."

MARLATE® 50—for effective protection of apples and cherries

Kill both codling moth and curculio on apples—use Du Pont "Marlate" 50 methoxy-chlor insecticide. On cherries, "Marlate" 50 eliminates the need for arsenic... protects fruit from one spray to the next... doesn't contribute to dry stem.

PARZATE®—ideal "top-off" spray for late apple diseases

For late summer control of sooty blotch and flyspeck, use light-colored, mild Du Pont "Parzate" zineb fungicide to assure top fruit yields. "Parzate" leaves no harmful residue on fruit... can be applied right up to harvest time.

On all chemicals follow label instructions
and warnings carefully.

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**America's Finest
Cultivator —**
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Throw away that spade and hoe! Here's the tool you've been waiting for. Tills up to 7" deep, cultivates quickly and easily between narrow garden rows without leaving unworked even the tiniest area it passes over. An entirely new principle of horizontally-rotating tines does a superior job and you don't work at all just guide it.

Thoroughly tested in 3 years of limited production, now in high volume production to meet the tremendous demand. At this low, low price for such a high-quality power tool, all America will instantly recognize the value—and practically anyone with a lawn or garden can afford it. Full 2½ h.p., self-propelled, cultivator works equally well on front or back.

INSTANTLY INTERCHANGEABLE ATTACHMENTS
In just seconds, the new PRESS-MATIC Method of attaching lets you take off the cultivator and substitute either the beautiful 22" self-propelled twin spindle rotary mower (\$27.50), or the Safe-Speed Edger (\$27.50) attachments. They're integrally designed, unequalled at many dollars more. WRITE TODAY for free color folder telling full details about the NEW Hummin'bird and the other three ROTO-HOE lines. We'll also send you nearby dealer's name. Write to **ROTO-HOE, Dept. A-53, NEWBURY, OHIO.** Do it now!

Read the advertisements and remember advertisers will be glad to send you catalogs, specifications, and prices. Be sure to say you saw it in AMERICAN FRUIT GROWER.

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Get Bigger Yields and Better Quality

Proper balance of plant foods and the alkaline-acid range of the soil (pH) are critically important for fruits—Soil Tests are indispensable! You'll harvest more fancy grade, get higher prices. In just 2 weeks your lifetime Sudbury Soil Test Kit will pay for itself many times over!

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You'll save up to \$15 an acre on fertilizer. Every \$1 spent pays up to 12 times as much in extra yield. So reliable it is used by county agents, ag colleges.

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Easy As Reading A Thermometer

No Knowledge of Chemistry Needed

Takes only 10 minutes, costs less than 10¢ a test. Shows right formula for each field: nitrogen, phosphate, potash, and lime. Lifetime welded steel chest with handle. Makes hundreds of tests. Only \$29.95!

SEND NO MONEY—We'll mail your Kit C.O.D. plus postage, if desired.

Or send check and we'll prepay saving you \$1.91 to \$3.65 postal fees and include valuable free book, "Our Land and Its Care."

Easy Payments If you wish, let me know how much you want to pay for your Kit—see coupon.

Sudbury Laboratory, Box 71K, South Sudbury, Mass.
Send me the Sudbury Soil Test Kit as marked below.

Enclosed is \$29.95; Send Kit C.O.D.

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Dealers: Write for Special Offer

in Kansas, and one of the most productive and precocious pecans in other lower midwestern states. From southeastern Illinois he introduced Chief, a nut larger than any other pecan variety native that far north.

Present and potential varieties for midwestern commercial plantings (or topworking on wild trees) include two groups in reference to



Wire guard protects young Starking Hardy Giant pecan tree against cattle in pastured orchard.

flowering. Experience shows that some of each should be included in each planting for effective cross-pollination. Major sheds pollen early, as well as the thinner-shelled and earlier-maturing Perue, a productive variety from near St. Charles, Mo. Chief also is in this group (probably less productive), as well as Witte, an Iowa variety that matures best in D. C. Snyder's orchard, Center Point, Iowa, and Hirschi, from western Missouri.

The second group has later pollen-shedding but earlier pistil receptivity. It includes Giles and Greenriver, Colby (a large, early October-maturing, and prolific variety just named by the University of Illinois), Posey (largest of the Indiana varieties and a moderate but consistent bearer), and the long, fairly early maturing Hodge (of Illinois origin and suggested particularly as the one variety shedding late enough to pollinate Chief). Starking Hardy Giant (thin shelled and one of the most northern in origin, at Brunswick, Mo.) is among the new varieties not yet classified according to their flowering habit.—J. C. McDaniel, University of Illinois.

SAVE MONEY WITH A SOIL TEST

ILLINOIS agricultural authorities estimated recently that 60% of farmers in that state who neglected to test their soil lost \$5 million in wasted fertilizer. Moreover, 100,000 tons of limestone were used where not needed!

Another farm leader recently said: "The soil testing that is needed today cannot be done, till the next generation, because of a lack of facilities, unless more farmers do their own."

Leading growers always take stock of their soil and find out if it is above or below average fertility level.

Choosing the site to get samples for soil tests is important. It must be a typical site within a single soil area in the field. Soil should not be taken from non-characteristic spots. The usual procedure is to dig a hole with a spade as deep as the plow-layer. The sample taken is a slice of the vertical wall of the hole not more than one-half inch thick. Ten of these samples are taken in a half acre of the same soil type, dried and mixed together to make a composite sample for the testing.

Maintaining soil fertility is a desirable long-term as well as short-term program. Tests should be taken frequently and compared. Such factors as leaching, erosion, and crop

removal of nutrients create different conditions.

For instance, re-testing the level of available phosphorus and potash in the soil is important. A reserve of these elements may be built up, and, in such a case, applications of these elements can probably be greatly reduced for three or four years.

To prove this, test crops were grown on previously well-fertilized land. One crop received a complete fertilizer program; the other nitrogen only. The latter produced just as high yield as the former due to the built-up reserve.

Soil testing can save money two ways. Use too much fertilizer, and money is wasted; some nutrients may actually become locked up so they are unavailable to the plants. Use not enough fertilizer, and yields and quality are diminished; too little of even a minor element is bad.

Testing soil is the only practical method for determining when and how much to fertilize. THE END.

Plastic greenhouse working drawings, prepared by University of Kentucky and Cornell University, are available for 25 cents from AMERICAN FRUIT GROWER, Willoughby, Ohio.

COSTLY CULL

(Continued from page 11)

their orchards in recent years. However, materials and labor have cost a great deal, and these costs are increasing.

What is the cost? An estimate by Ohio entomologists placed the cost of insect control on apples in Ohio in 1956 at \$750,000. When one remembers that Ohio is not one of the larger apple-producing states and projects that figure over the entire United States, he obtains a staggering figure, and it covers only apples.

What is being done to ease the burden of insect control on fruit growers? Reports show that since 1950 the amount spent by industry for developing new pesticides has nearly doubled, until it now amounts to about \$15 million per year. The annual expenditures of the USDA and other federal agencies in this same field are reported at between \$4.5 and \$5 million.

The hope is for insecticides that are superior to those now available, that have a broader range of usefulness, that are less expensive in relation to the quantities needed for control, and that are of a chemical structure that will prevent insects from becoming resistant to them.

Several new materials became available to growers in 1957 or will be available for the 1958 season. Perhaps the most promising of these is **Guthion**, a phosphorus insecticide that for several years has given outstanding control of a wide variety of orchard pests in experiments in all sections of the United States. Among these pests are the codling moth, red-banded leaf roller, Oriental fruit moth, plum curculio, peach tree borer, mites, aphids, tarnished plant bug, and stink bugs. Approved tolerances and labels permit its use to within 14 days of harvest on apples, pears, peaches, apricots, nectarines, and quinces.

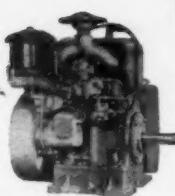
Diazinon, another promising phosphorus insecticide, became available to growers of apples, pears, and cherries in 1957 and can be used to within 14 days of harvest on apples and pears and 10 days of harvest on cherries. It is likely to be found most effective against the codling moth, aphids, pear psylla, apple maggot, and cherry fruit flies and is of value in mite control.

Phosdrin is another phosphorus insecticide that is now available for grower use. It is of special interest because it kills quickly and then decomposes rapidly into harmless compounds, so that it can be used on

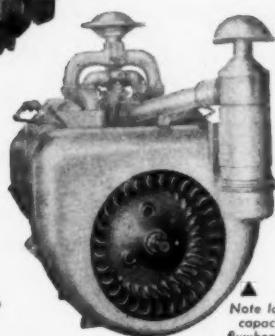
(Continued on page 54)

FEBRUARY, 1958

2-cylinder
models
10 to 18 hp.



4-cycle
single cylinder
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Note large
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DISEASE CONTROL

(Continued from page 14)

spores, thereby resulting in severe foliage infection of some of the so-called resistant varieties, such as Winesap and Golden Delicious. Normally, rust is satisfactorily controlled with either ferbam or zineb. This is good evidence that under optimum conditions our fungicide programs may be inadequate.

Apple Powdery Mildew. This disease is prevalent in most Illinois orchards. Thus far, however, except for one or two Jonathan blocks, it has been considered to be of minor importance. Wettable sulfur is being used on susceptible varieties through the first cover. Most growers are using it at one-half strength (3 to 4 pounds per 100 gallons) plus an organic fungicide of their choice at one-half strength. Very little Karathane or mildex has been used except for experimental use. Since there is recent information to show that $\frac{1}{2}$ pound per 100 gallons instead of 1 pound is adequate for powdery mildew control, and that its use is no longer restricted in hot temperatures, Karathane and mildex may be used more in the future.

Bitter Rot. This disease is causing considerable concern in many apple areas. Illinois surveys have shown that it has increased tremendously during the past five years. Information from other midwest states indicates a similar upward trend of bitter rot infection. It also has been found working its way northward in Illinois.

Since this disease is highly erratic and may suddenly appear any time from mid-July to mid-September, it poses a serious problem. Thus far, we have had to rely on either captan, 2 pounds/100 gallons, or Bordeaux mixture (4-6-100) for control.

Neither captan, 1 pound per 100 gallons, nor any of the other accepted organic fungicides are effective.

Fire Blight. Many orchards still have serious trouble with this disease. The antibiotics have definitely proven their worth, however, in preventing blossom infection. In the Illinois area, on susceptible varieties, streptomycin must be used at weekly intervals from May 1 to July 15 for adequate control.

Recent experiments in Illinois have helped in developing two important aspects of blight control: 1) Annual sprays of copper sulfate 4 pounds per 100 gallons in the dormant period will greatly aid in control by reducing inoculum produced in the limb and twig cankers. 2) freezing temperatures within 17 days of early bloom will delay primary infection as much as two weeks (unpublished data).

Peach Leaf Curl. More damage was caused from this disease in 1957 than for many seasons. A prolonged cool, moist period in late March and early April was responsible for its development. Growers who depended on the previous summer's fungicide program for control instead of a special dormant spray had damage in 1957. From this experience it is concluded that regardless of the previous summer's schedule, a fungicide in the dormant period, thoroughly applied, is the only safe measure for peach leaf curl control.

Peach Scab. Oddly enough this disease, which is normally of minor consequence, is appearing in many orchards where sulfur has been omitted from the fungicide program. Results from experiments in Illinois indicate that sulfur is extremely effective in controlling peach scab while neither captan nor glyodin give adequate control. We

may need to give this disease more serious consideration in the future.

Peach Bacterial Spot. The standard practice where this disease is prevalent is to use high concentrations of zinc sulfate and lime and make as many applications as necessary. Some growers use a 5-8-100 zinc Bordeaux and some, 8-8-100. In any case, there is evidence each year that such sprays are effective but not sufficiently effective year after year that a definite recommendation can be made.

Recent experiments in various parts of the country have shown that 50 ppm streptomycin applied as needed according to infection periods will give significant control. This practice may become more widely adopted as streptomycin becomes more economical to use. Early fall sprays of a suitable bactericide may give a significant reduction of the winter carry-over to be worthwhile. In general, however, this disease is still difficult to control satisfactorily.

Peach Brown Rot. Peach growers are becoming more aware of the importance of sanitation in controlling disease. The presence of apothecia in the peach orchard is almost considered illegal; 99% of blossom infection is caused by ascospores discharged from apothecia. There is no question but what it is extremely helpful to remove all rotted fruit and drops and not let them be a source of inoculum. Destroying wild plum thickets in fence rows adjoining peach orchards is a must.

After a good sanitation program, dichlorone-sulfur sprays or dusts in the early and full bloom periods have been very satisfactory in controlling blossom blight. Captan is being widely and effectively used in preharvest sprays. More and more growers are employing hydrocooling as a postharvest procedure.

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Strawberry Leaf Diseases. There has been a steady increase in strawberry acreage throughout the Midwest and the industry has now reached significant proportions. As the industry grows, production problems increase. This past season leaf scorch caused very severe damage. Kentucky estimated a 1½ million dollar loss from this disease in 1957. Many plantings in Illinois were 100% infected before harvest was completed. Thus far, no one has shown that we have a satisfactory control for leaf scorch, except for the use of resistant varieties.

Leaf spot apparently can be effectively reduced with the normal captan applications for gray mold.

Dendrophoma leaf blight has become more of a late summer problem and its importance has not been thoroughly evaluated. Work in Michigan has shown the value of an organic mercury spray in reducing **Dendrophoma** if applied in the early spring period (prebloom) as the first leaves start to develop.

Since the leaf diseases all overwinter in both dead and live strawberry foliage and produce spores early in the spring, such a spray has merit. Foliar fungicides such as captan during the growing season will also be used with special emphasis on thorough coverage as both the leaf spot and leaf scorch diseases always start on the under surface of the leaf.

THE END.

STRAWBERRY ROOT KNOT

(Continued from page 16)

Selection of nematode-free plants, or treatment of planting stock in a hot-water dip to kill nematodes in roots. (Since hot-water dip sometimes injures plants, this method is NOT recommended for fruiting fields.)

A new method, that of side-dressing nursery beds after the plants have started to grow with soil fumigants containing dibromo-chloropropane, shows some promise in controlling root-knot nematode both in soil and in plants.

No blanket statement can be made regarding sources of root-knot free plants, for even with what appears to be the greatest care, infected plants may be found when a field is dug. State-certified plants coming from reputable nurseries today, however, are far better than several years ago.

Control—by the Grower. If the grower is fortunate enough to have land that is free of northern root-knot nematode, he should try to avoid introducing it in infected stock. It will attack not only strawberry but also such varied crop plants as muskmelon, eggplant, bean, and tomato that might be grown in the field later.

If the nematode is present, a good rule to remember is: The fewer the nematodes (both in the plants and in the soil) the less damage. Bodily infested soil can be improved by a pre-plant fumigation with soil fumigants containing ethylene dibromide or dichloropropene as the active ingredient. Instructions of the manufacturer should be followed carefully.

When northern root-knot nematode is present in a planting, good cultural practices such as correct application of fertilizer to enable the plants to make good, full beds; reduction in weed competition; and irrigation to compensate for the reduced number of roots during dry weather will do much to offset the damage. If conditions favor a build-up of the nematodes, even these practices may not insure good growth or yields in older plantings.—John R. McGrew, USDA.

Some of the trade names of soil fumigants are: Dowfume W-85 (Dow), D-D (Shell), and Telone (Dow). Information on and availability of fumigants manufactured by these and other companies can generally be obtained from your state experiment station or local supply dealer.—Ed.

The most troublesome plant diseases are controlled with Copper Sulfate Bordeaux — Bitter Rot, Scab, Blotch, Fruit Spot, Black Rot, Cloud and Phoma Fruit Spot of Apple, Anthracnose of Cantaloupe, Watermelon and Small Fruits, Black Rot, Bitter Rot and Downy Mildew of Grape, and many of the diseases attacking the foliage and fruit of citrus and nut trees.

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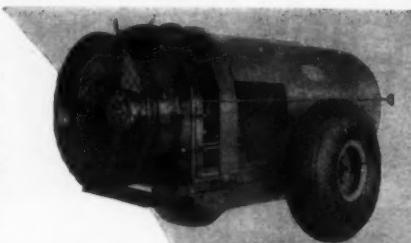
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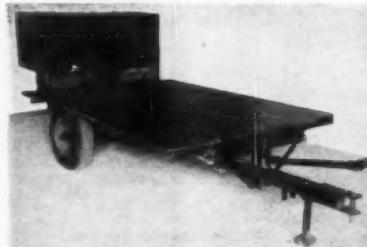
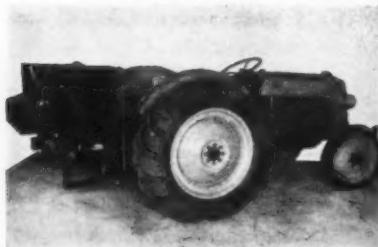


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All Purpose Sprayer

A new type of sprayer unit for row crop or orchard use has just been introduced. The new sprayer is built with a 100- or 125-gallon tank. The sprayer is ingeniously carried on the tractor's hydraulic system. The tank is equipped with mechanical agitation and two pumps are available, a Hypro pump for field work or the Wanner 500-pound pump for orchard spraying. The new sprayer is priced low, starting at \$233. You can get full details by writing Jim Rear, Rear's Farm Service, 755 River Ave., Eugene, Ore.

Worth Every Penny

The USDA, in conjunction with a well-known pruner manufacturer, has developed a most useful and worthwhile booklet on pruning. Well illustrated, it features the different methods of pruning and the proper pruner to do the job. The booklet was quite expensive to prepare and therefore, must be sold for 25 cents a copy . . . and, I might say, it is worth every penny. For your copy, write H. S. Bartlett, Bartlett Mfg. Co., 3003 East Grand Blvd., Detroit 2, Mich.

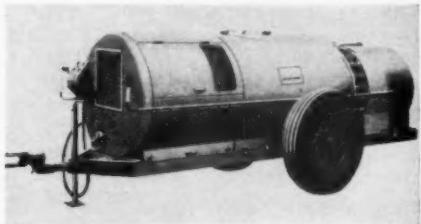


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Last week I saw the new 1958 Speed Sprayer, and this tried-and-tested machine includes many new refinements and options which make each unit of Speed Sprayer tailor-made to your orchard conditions. A new, improved industrial power plant is standard equipment; op-

- New Type Sprayer
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tional tank sizes and added lower deflectors for better control of air direction are just a few of the changes which make



the sprayer ideal for commercial fruit growing. Art Gerard, John Bean Division, Food Machinery and Chemical Corp., Lansing 4, Mich., will send you a brochure of the machine if you write.

Bristles and Fruit

Seldom have we growers thought about how important bristles are to good fruit and higher prices. I have just finished reading an interesting booklet on this subject which you should study. The booklet describes how important the right bristle is in your grader and sorter. A copy is yours by merely writing M. W. Jenkins' Sons, Inc., Cedar Grove, Essex County, N. J. Mention you saw it in AMERICAN FRUIT GROWER.



Save Time, Money

More growers are using rotary brush cutters to cut up orchard prunings and mow between the rows. The new 80-inch offset cutter pictured below does an exceptional job. The new mower is equipped with four blades, Bull Dog ball bearing

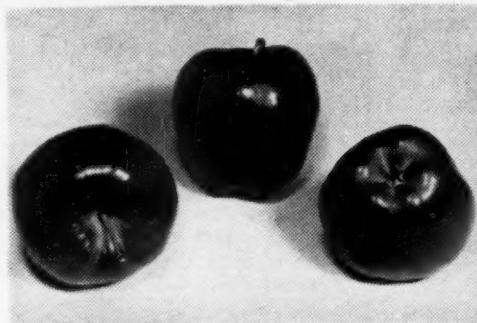


jacks for quick height adjustment and easy one-man hook-up to your tractor drawbar. There are eight other wonderful features about which you will want to know. Write Murrell Crump, Sunflower Industries, Inc., Olathe, Kans.

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THE COSTLY CULL

(Continued from page 49)
apples, pears, peaches, and plums close to harvest. However, it is very hazardous to handle and protective masks containing a special filter should be worn by all who use it. Also, it has occasionally caused some injury to apples, so that it cannot be given an unqualified recommendation for that crop until the reason for this injury is determined. It was found useful for controlling TDE-resistant red-banded leaf rollers in 1957, and is also of value against mites and aphids.

Chlorbenside, strictly a miticide, is highly effective in suppressing early-season populations of mites and now has label approval for pre-bloom applications for that purpose. It should not be used during the summer, because of its tendency to cause injury as well as the lack of a residue tolerance.

A number of additional chemicals that have been reported as showing promise during the last year or two are still very much in the picture. Some are being considered for establishment of tolerances and others are nearing the point where they can be presented for similar

consideration. Foremost among them are **Kelthane**, a chlorinated compound, and **Sevin**, a carbamate.

Kelthane is strictly a miticide and has been outstanding in many tests. Sevin appears to have a broader field of usefulness. It has been outstanding in codling moth control for two seasons and of value against red-banded leaf roller, Oriental fruit moth, aphids, tarnished plant bug, and stink bugs. Castillo Graham of Maryland Agricultural Experiment Station has reported it to be far superior to any other known insecticide for controlling periodical cicadas.

Other materials include **Trithion**, **Chipman 6199** (**Tetram**), **Niagara 1240** (**Nialate**), and **Hercules AC-528** (**Delnav**), all phosphorus insecticides that have shown value as miticides. The first three materials have also shown value in codling moth control. **Tedion**, a nonphosphorus compound, is extremely promising for controlling mites. **Fensone** (p-chlorophenyl benzenesulfonate), already in use for controlling mites in Europe but first tested in the United States in 1957, appears to be an effective miticide.

THE END.

Michigan and Ohio Report on

FOUR NEW INSECTICIDES

Guthion

GUTHION, a promising versatile insecticide which was recently introduced by the Chemagro Corporation, has produced some startling results in the fruit insect research program in Michigan for the past two seasons.

A phosphate-type compound, Guthion possesses a desirable residual effectiveness which has given commercial control of such pests as codling moth, red-banded leaf roller, aphids, red mites and two-spotted mites, apple maggot, Oriental fruit moth, grape berry moth, lecanium scale, raspberry aphid, strawberry leaf rollers, spittlebug, blueberry maggot, pear psylla, peach borers, cherry fruit fly, and plum curculio.

Research work conducted by the department of entomology, Michigan State University, on apple insects indicates that Guthion can be used at the rate of $\frac{1}{2}$ pound active per 100 gallons of spray at two-week intervals beginning with petal fall, with excellent results. Either the wettable powder or emulsifiable concentrate can be used.

Studies with Guthion on McIntosh, Golden Delicious, and Jonathan varieties indicate that no injury to foliage or impairment of fruit finish occurred during an all-season program at 14-day intervals. Flavor evaluations at harvest after treatment with Guthion with raw fruit and applesauce yielded no flavor changes.

Codling moth control was excellent. Not only were very few wormy apples found in a large 50-tree experimental block located at the Max Hood Farm near Paw Paw, but there were surprisingly few "stung" fruit. In comparison with the unsprayed check samples, Guthion gave nearly 100% control.

At the Oliver and Ken Lawrence farm near Benton Harbor, Guthion gave a high degree of control of red-banded leaf rollers in an experimental block of mixed apple varieties. Aphids and mites were also nearly nonexistent at either orchard as a result of spraying with Guthion.

A disadvantage with Guthion is that the compound is considerably toxic in the concentrated form. Caution:

tion should be exercised when handling the material and while spraying in the orchard.

Guthion has already been labeled for use on apples, peaches, and pears with a tolerance of 2 ppm and a no application restriction of two weeks before harvest. Other fruits such as plums, cherries, strawberries, and brambles are pending clearance by Food and Drug Administration and Guthion should be registered for legal use on these crops by the time the season begins in 1958.

Guthion will be suggested for limited amount of grower trial use in Michigan on apples, peaches, and pears. If this part of the program works to satisfaction, Guthion will be recommended for commercial usage in the near future.—R. G. Haines, Michigan State University.

Phosdrin

MANY fruit growers have requested the availability of an insecticide which could be used immediately before harvest. Quite often a late outbreak of an insect creates definite hazards, yet present-day insecticides cannot be employed because of the problem of excessive residues.

In the fruit insect research program at Michigan State University Phosdrin insecticide (Shell Chemical Corporation) has been tested specifically for preharvest application against several insects on 11 commercial fruit crops grown in Michigan. Phosdrin displays the unique ability to degrade very rapidly, immediately after application, and almost all residue data indicates that less than 1 ppm remains one day after spraying.

Phosdrin has given commercial control of codling moth, red-banded leaf roller, aphids, red mite, Oriental fruit moth, grape berry moth, scale crawlers, plant bugs, plum aphid, pear psylla, raspberry aphid, currant aphid, strawberry leaf rollers (common and oblique-banded), black cherry aphid, tussock moth, blueberry maggot, fall web worm, spittlebug, and raspberry leaf roller.

Because Phosdrin has exhibited such a wide range of insect control, and because it can be legally sprayed on fruit crops within one day before harvest, it makes an ideal situation for growers. This chemical can be used as an "ace in the hole" for those who suddenly find themselves faced with an insect problem just before harvest.

Phosdrin has been experimentally tried against fruit insects at the range of from 4 to 8 ounces of active material. Research data indicates that the latter dosage gives the best results.

There is one caution, however. Phosdrin is considerably toxic to

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warm-blooded animals. The chemical should not be handled carelessly, and before the grower intends to use Phosdrin in his spray program he should heed all precautions.

Because the material disappears so readily, Food and Drug Administration has granted a tolerance of 1 ppm and a limitation of one day before harvest from last application.—R. G. Haines, Michigan State University.

Diazinon

DIAZINON insecticide (Geigy Agricultural Chemical Co.) has undergone three years of experimentation for control of various fruit insects in Michigan as part of the fruit insect research program in the department of entomology at Michigan State University.

Diazinon is a phosphate-type compound which has approximately a 12-day residual effectiveness against many major insect pests of fruit. It is compatible with all commonly used pesticides except the copper fungicides and is relatively safe to handle.

There is substantial experimental evidence that 2 pounds of the 25% wettable Diazinon will satisfactorily control codling moth, apple maggot, blueberry maggot, cherry fruit fly, scale crawlers, aphids, spittlebug, strawberry leaf rollers, pear psylla, grape berry moth, and blackberry leaf miner. In addition, Diazinon has suppressing action on red-banded leaf rollers, European red mites, and two-spotted mites.

All season programs starting at petal fall with, Diazinon on apples have produced good quality fruit free from insect injury and finish impairment. Phytotoxicity studies in several apple varieties with both Diazinon wettable and emulsifiable indicate that the chemical is non-injurious to foliage and, except for the emulsifiable concentrate on Golden Delicious, it has not caused russetting of the fruit.

A specialty of Diazinon is its amazing ability to control maggot-type insects such as cherry fruit fly, blueberry maggot, and apple maggot.

In addition to maggot control, Diazinon is almost a specific chemical for many species of aphids that attack fruits. One pound of 25% wettable is sufficient quantity to maintain 10-day control of green aphids on apples and peaches.

Diazinon has been cleared for use by Food and Drug Administration on

apples, pears, and cherries with a tolerance of 0.75 ppm and a restriction of two weeks from last application date until harvest.

In 1958, Diazinon will be suggested for maggot, aphid, and codling moth control on apples; maggot control in blueberries and cherries; and aphid, codling moth, and psylla control on pears in Michigan.—R. G. Haines, Michigan State University.

Sevin

A NEW spray chemical of unique formulation and with marked control abilities is about to be introduced.

This material has been named "Sevin" and is a product of Carbide and Carbon Chemicals Company, a Division of Union Carbide and Carbon Corporation. Sevin is an aryl urethane whose chemical name is I-naphthyl N-methyl-carbamate. It is the first material of this group to show promise as an insecticide.

Sevin has been used in experimental work by Ohio station entomologists during the last three years.

Against apple pests such as codling moth, red-banded leaf roller, and aphids, Sevin has been most promising. The results of one test conducted at Lorain, Ohio, in the Schmitkons Brothers Orchard are summarized in the table. Excellent control of both codling moth and leaf roller were secured by the use of a five spray schedule of Sevin. Also, fruit finish and foliage condition were above average.

Space prevents presentation of data from other experiments and seasons. However, all have been favorable in control of codling moth, leaf roller, and aphids. Sevin is not a miticide.

Sevin has been used on apples, pears, peaches, plums, cherries, and grapes without injury, and preliminary results indicate that many of the insect pests of these fruits can be controlled.

All spray chemicals are poisonous in greater or less degree and this includes Sevin. Growers will be glad to learn, however, that Sevin is at least no more toxic than DDT. Extensive studies of both acute and chronic toxicity by experts in this field show its relative safety. This does not mean that it can be handled without caution, but it does mean that if the safety rules on the package are followed no ill effects will result.—C. R. Cutright, Ohio Agricultural Experiment Station.

Control of Codling Moth and Red-banded Leaf Roller With Sevin—Lorain, Ohio—1956					
Material	Amount per 100 gallons	Number fruits counted	Worms per 100 apples	Stings per 100 apples	Per cent injured by leaf roller
DDT 50% WP	2 lbs.	12,550	3.3	1.5	5.7
Sevin 50% WP	2 lbs.	9,802	.6	1.0	.5
Experimental C.	2 1/2 lbs.	14,749	12.9	1.7	5.8

RESISTANT INSECTS

(Continued from page 15)

mites. The brown almond and European red mites have been showing resistance to Ovex and other closely related materials.

Of even more importance than resistance is the proper selection of materials and timing of application. Ovex and Genite 923 still offer the best possibilities for early season control where resistance is not a problem. Either material should be applied with the pink bud fungicide sprays for maximum kill.

The brown almond mite spends many of its daytime hours on the bark of the tree; foliage sprays during the spring are less effective than the early season treatments. Several new miticides with longer residual activity may improve the kill of these spring foliage sprays.

Other Insects. Oriental fruit moth and plant bugs cause considerable damage in localized areas. The low populations necessary for damage, and the hit-and-run tactics of the plant bugs (*Lycus* and others) make control measures difficult, but not impossible.

Development of DDT resistance by peach twig borer is probably the most important insecticidal problem in the Stanislaus County area, the largest cling peach county in California. This is the same area which first developed twig borer resistance to basic lead arsenate. Growers in other peach areas will have to check closely for signs of resistance in their orchards.

Preventing Resistance. There are some practices which can improve control of peach twig borers, mites, and other pests and delay development of resistance. Alternation of materials is one possibility. For example, mites can be sufficiently contained by alternating dormant oil, Ovex, and one of the organic phosphates. A shifting from one material to another may be helpful in preventing resistance.

Other factors in delaying resistance to insects are proper timing and coverage. Preventive treatments of low populations is far better than trying to obtain control once a high damaging population has established itself. Treatment of developing populations gives better control than waiting until adults, nymphs, and eggs are all involved.

The importance of coverage cannot be overemphasized. Good scale control means ground to terminal coverage, proper gallonage control, and slow speeds with equipment in working order.—*Fred H. Petersen, Farm Advisor, Yuba City.*



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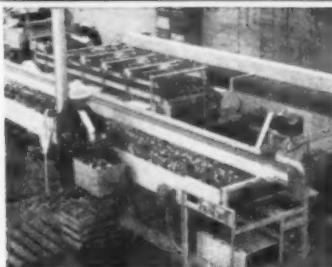
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SELLING THE CROP

EXPERIENCE OF Connecticut fruit growers who solved their 1957 harvesting and marketing problems with the "pick-it-yourself" method is summarized in a report from the University of Connecticut. Compiled by Dana G. Dalrymple, extension economist, fruit and vegetable marketing, the report, entitled "Fruit-Grower Experience with 'Pick-It-Yourself,'" is available from the Agricultural Extension Service, University of Connecticut, Storrs, Conn.

SUGGESTIONS FOR MARKETING the apple crop sparked the recent annual meeting of Michigan Apple Growers & Storage Association. These points included: Schedule movement in a more orderly manner, maturity and quality control, market expansion, better fruit and product, dual purpose varieties, increasing storage facilities in southwestern Michigan, creating demand through processing development, exchange of market information among sellers, research in creating new processing uses, continuing promotion with closer co-operation between salesmen and apple commission, change in selling habits, and combining sales efforts.

A PROGRAM OF direct delivery of apples into stores by Connecticut growers has been extended to the 1957-58 season. The plan was initiated by Jack Lyman, Middlefield, and Frank Rogers, Southington. Six orchards have joined the enterprise, which was incorporated last September as the Laurel State Fruit Growers Packing Association. About 100 First National supermarkets in the state, Westchester County, and Long Island are being served.

FOOD CHAIN supermarkets with "private brand" items are rapidly pushing farmers into contract arrangement with food processors, pointed out Gerald E. Korzan, Oregon State College agricultural economist. Addressing the recent 72nd annual meeting of the State Horticultural Society, Korzan explained that large retailers are now telling processors what they want in quality, delivery schedules, and often terms of payment to meet specifications of their "private brands". The speaker said top advantage to growers is that their marketing risk is reduced with a contracted ready outlet. Most contracts also provide some kind of technical assistance. Disadvantages include some loss of authority by the grower to make decisions. Korzan added that reduced risk under contract farming tends to attract new producers and to increase size of existing producers, which, in time, could lower prices.—Harold and Lillie L. Larsen, Silverton.

PROCESSING CO-OPERATIVES are taking a hard look at themselves after suffering losses which were reflected directly in prices to the grower. Here are some points posed by D. M. Dalrymple, Lockport, N. Y.:

- 1) Processing co-ops can not continue to put more fruit into cans than the consumer will take. The apple processing industry will have to restrain itself from

overpacking or be restrained by its creditors. 2) Established markets and brands are important to any processing group. Establishing and maintaining these brands is expensive and can only be done by a large business. 3) Consolidation of processor groups, both co-op and private, appears slow but inevitable. As growers, we should accommodate ourselves to what we think the wisest combination of consolidation and concentration of operations can be. 4) Maintaining consumption of a particular commodity is increasingly the growers' and processors' responsibility. Stores sell what is presold. We do not know the limit to what you can profitably spend for promotion. Perhaps under marketing orders and agreements law, we can share this new cost equally.

A NEW PROCESSING plant has been opened by Northern Hudson Apple Growers Co-operative of Columbia County, New York. The latest peeling, coring, and slicing equipment has been installed to process an anticipated daily volume of 800 30-pound containers of sliced apples. Sales are made through the Empire State Apple Growers at Hyde Park.

EARL BLASER, Sutter County, board chairman of California Canners and Growers' proposed processing co-operative, reports that directors are negotiating for the purchase of several canneries. The Cal Can group incorporated recently with a proposal to set up a co-operative growers cannery and marketing organization to handle major crops. Principal sponsor of Cal Can is the California Canning Peach Association, but other backers include the pear, tomato, asparagus, and freestone associations. Plans are that the co-operative will take over the existing staff of any purchased cannery or group of canneries and continue to market under present labels until the Cal Can brand is promoted on a national basis.

HOW RED should an apple be? Is the premium consumers pay for red color enough to offset extra production cost?

A study by West Virginia researchers revealed that red apples move three times faster with about 50% in color than lots with only 15% color. Red apples sold 76% faster when price was reduced one-third, and the retailer's gross dollar volume was greater.

CONTROLLED ATMOSPHERE storage capacity in the Hudson Valley and Lake Champlain area totals 1,076,500 boxes, according to the New York State Department of Agriculture and Markets. This capacity is in the hands of 30 operators, who run a total of 98 rooms. Massachusetts now has 190,000 bushel c-a storage capacity, an increase of 75,000 bushels over last year. Storage operators total 22.

A TOTAL OF \$7,609,810,000 was spent by American consumers for fresh produce in 1956, an increase of 7.6% over the previous year, according to the 10th annual consumer expenditure survey by *Food Topics* magazine. Among the top 25 items in dollar gains in grocery stores, fresh fruits ranked third.

SELECTING A familiar axiom, Pacific National Advertising Agency is playing up the theme, "All Good Things Come in Pears," on this year's advertising banners to promote Bosc and Anjou winter pears.

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WEED CONTROL

GROWERS endeavoring to control weeds with chemicals in their orchards, vineyards, or berry fields can easily overdo a good thing.

This was brought out at the sixth annual Oregon Weed Conference, held recently at Oregon State College, Corvallis. A fine line exists between a weed-killing dosage and one which will also kill useful plants, it was pointed out.

Weeds in caneberry fields can be held in check by two sprays (one each in spring and fall) of 2 pounds per acre of diuron, Dr. R. M. Bullock, superintendent of Southwest Washington Experiment Station, Vancouver, reported.

To control quack grass, at least 10 pounds per acre must be applied. Tests indicate that there is very little breakdown of diuron when it is applied at high rates. Although there is some movement into the soil, no visible effect on berries had been noted, Dr. Bullock reported.

Sesone, which is effective only on germinating seeds, was used with good results all through the season at 3 pounds per acre. It lasts for a month to six weeks. Results may be disappointing at first because of the tremendous reservoir of weed seeds generally found in fields, he pointed out. However, about four applications the first year should be sufficient, followed by three the next year.

Best time to apply Sesone is just before or after a rain or irrigation. A good seedbed is needed for satisfactory results, and "if you can see the weeds, it's too late for Sesone," Dr. Bullock added.

Several new chemicals which look promising, but for which no recommendations could be made by Dr. Bullock, include Natrin, which is similar to Sesone; 3-Y-9, both liquid and granular; Randox, Mylone, and Neburon, a urea product. The last item, applied at the rate of 3 pounds per acre about two weeks after strawberry plants were set out, kept weeds down throughout the summer.

Similar results were obtained with Simazin at 1 pound of the actual material per acre. At 2 pounds of Simazin, not only were plants severely affected, but some died.

Simazin, a non-selective herbicide, is relatively non-toxic to humans and animals, non-irritating to the skin, and is relatively odorless, according to Vernon W. Olney,

(Continued on page 63)

Plant



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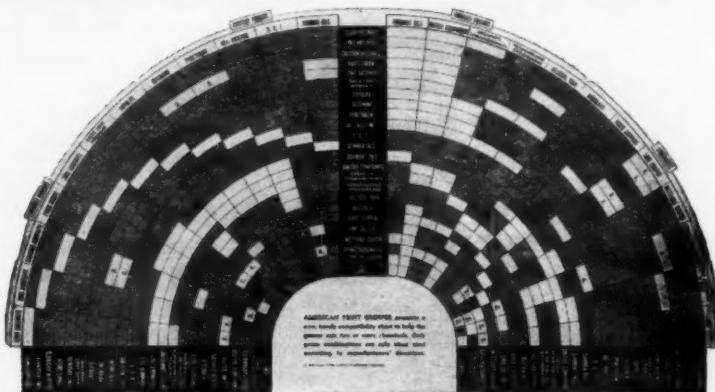
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APPLE ORCHARD, 100 ACRES. YOUNG. Best varieties. Vigorous trees. New buildings. Cold storage. Four water systems. Equipment. Fine location. Health causes sale. Ask details. ELLENWOOD ORCHARDS, Carpenter, Ohio.

1100 APPLES, 15-20 YEARS OLD, 50 ACRES. Hardie sprayer with fan, grader, other equipment. No marketing problem. Hiway 30 near Omaha. 6-room modern home, packing shed, 3,000 bu. cave. JIM NIEBAUM, Missouri Valley, Iowa.

BECAUSE OF AGE AND HEALTH, WE ARE selling as a unit, 2 apple orchards with complete equipment. Home orchard 40 acres in village, 20 in apples. House 8 rooms, oil heat, artesian water, storage barn, machinery shed, etc. Also 60 acres, 40 in apples, 7-room house, oil heat, artesian water. Buildings and equipment in good condition. WOODBURY ORCHARDS, Woodstock, Connecticut.

80-ACRE FRUIT FARM, 6 ROOMS AND bath, 2 wells, chicken house, barn and sheds, 1600 fruit trees, Friend air master sprayer, Friend grader, Farquhar cider press, Ferguson tractor, approximately 3500 crates, ladders, etc. 20 miles from Harrisburg. See R. L. SCHUCHMAN, Shermans Dale, Pa.

105 ACRE FRUIT, POULTRY FARM, APPLES, peaches, cherries, sandy soil, large brick house, two baths, 2 barns, priced to sell. FRED KAPPUS, Burt, N.Y.

FOR SALE—100 ACRE FARM, PRINCIPAL crop apples. Beautiful location in Alden area near Torch Lake. Two good houses and huge barn with insulated storage. Excellent father-son opportunity. MRS. H. H. WOOD, 1148 Ash St., Winnetka, Illinois.

VERMONT OPERATING ORCHARD, TWO STORY fruit house over 100 ft., electric grader, rollers, etc. Main house 11 rooms, tenant 7 and 7 other buildings. Orchard equipment. Physical impairment makes only small cash above mortgage required. Might consider experienced man, salary and percentage if not sold. Box 181, AMERICAN FRUIT GROWER, Willoughby, Ohio.

PATENT ATTORNEYS

INVENTORS! WHEN YOU ARE SATISFIED that you have invented something of value, write me, without obligation, for information as to what steps you should take to secure a patent. Write PATRICK D. BEAVERS, registered patent atty., 813 Columbian Bldg., Washington 1, D.C.

RABBITS

RAISE ANGORA, NEW ZEALAND RABBITS or mink on \$500 month plan. Free details. WHITE'S RABBITRY, Delaware, Ohio.

SITUATIONS WANTED

YOUNG MARRIED MAN SEEKS POSITION as working manager or foreman for apple orchard; experienced; excellent references. Write AMERICAN FRUIT GROWER, Box 179, Willoughby, Ohio.

TRADE MARKS

NATIONAL TRADE MARK COMPANY, Munsey Building, Washington 4, D.C.

STRAWBERRIES. Newest Varieties—Earldawn, Surecrop, Redglow from U.S.D.A.; Jerseybelle from New Jersey; Sweetie, Bluebird, Bonita, etc. New and other leading varieties and how to grow them. Crop free. Write today. W. F. ALLEN CO., 105 Pine Street, Salisbury, Maryland.

You'll Get Better Growth With Mayo's BETTER PEACH TREES

Manure-grown—heavy roots, harder stock. Every tree caliper 9/16" to 1". Golden Jubilee, Hale Haven, Red Haven, Elberta.

\$90.00 per 100

Rush Your Order Today—Spring Delivery
MAYO BROS. NURSERIES, Dept. AF, Fairport, N.Y.
Satisfaction Guaranteed. Price List on Request.

AMERICAN FRUIT GROWER

'1958 Will Be Different'

"AS with every other year in the fruit business, the year of 1958 will be different." So says H. D. Hootman, secretary of Michigan State Horticultural Society and well-known fruit specialist.

What Hootman says is, of course, fairly obvious; but the hardest thing to appreciate is that it is *really true*.

It begins with the preceding season—in fact, it is a question whether 1957 does not have more to do with the 1958 crop than does 1958 itself. Fruit buds were formed and developed in 1957. Rainfall, temperature, nutrition, insect and disease control all played a part in the vigor of the foliage and the storing of food materials in the roots and branches for the 1958 crop.

Then came the possibility of a devastating early fall freeze and severe winter cold. Mice, deer, and rabbits have their say. Even the partridge may decide to feast on fat buds of dormant apple trees.

Now comes the blossoming and all the attendant hazards of spring frosts and delayed winter blasts. Perhaps the winter chill is not sufficient to break the dormancy of peach trees in southern areas. Perhaps the frost is just enough to thin the fruit economically, or perhaps every blossom sets so that chemical and hand thinning are necessary.

Maybe the rains are so severe that big sprayers cannot get through, and apple scab is bad. Maybe it is excessively dry.

Now comes the surprise—*insects and diseases*. Mildew is unheard of until it suddenly appears. Leaf roller was never a problem until the year that it attacked everything.

Hail may decide to visit. Wind may whip the fruit. Drought may reduce the crop, or rainfall may make early season estimates sound silly.

Fruit drop may be heavy, or not enough. Color may be good, or it may not be. Harvest weather may be favorable or almost impossible.

Storage problems may be severe or of no major concern. Market opportunities may open on all sides, or they may stay exasperatingly closed. Prices may be good, or they may be bad.

These and a hundred other factors

go to make up the season. What is "normal" one year is "abnormal" the next. And about all that a good grower can do is to recognize all of these possibilities, get set for them, meet them as they arise, and be surprised at none.

"Happily," as grandmother used to say, "Most of the worst things don't happen."

Apples for Beauty

APPLE promotion received a friendly boost recently when *Coronet* magazine, Coronet Building, Boulder, Colo., published an article advising people of the food value of apples. This means that *Coronet's* approximately 3 million subscribers may become more apple-conscious.

In the *Coronet* article, "sip away—4 lbs. in 3 days," the author, Alexandra Kropotkin, makes this suggestion to those who want to reduce safely: Eat three apples a day, add a few other essential nutrients, and sip buttermilk. You will look and feel four pounds younger in three days!

Apples—delicious, highly-protective, non-fattening—offer you *beauty* vitamin C; minerals; bulk; and variety without your having to plan for it, says the author. A good-sized apple baked with a teaspoon of sugar has only 150 calories, she comments; a medium-sized raw one only 75.

Fruit Growing is Such Fun!



Fruit Talk

The "apple break" suggested by the experiment station at Geneva, N. Y., has been greeted enthusiastically at various group meetings.

Sunkist Growers, Inc., feel that California-Arizona citrus growers must look to fresh fruit sales for satisfactory returns.

Says Jack Bittner, horticultural marketing specialist of Benton Harbor, Mich.: "We tend to inherit the reputation of our poorest quality."

The idiosyncrasies of humans is difficult to explain. It now turns out that the reason certain chains prefer strawberries in 16-quart to 8-quart flats is that the books in the main office are set up for 16-quart flats!

A plastic insert of polyethylene has been developed for small cartons (1 quart to 5 gallons) which is liquid tight and of interest to the juice industry.

The suggestion from Dr. W. H. Wolff and his daughter, Dr. Emily T. Wolff, of Hobart-Smith College, that mulching tends to reduce fire-blight in fast-growing pear trees (perhaps because of soil antibiotics produced under such conditions) has been the experience of the late Rory Collins, of Hood River, Ore., Wirk Wark of Michigan, and a number of old friends in the Hudson River Valley.

New York state has adopted regulations covering the use of the term "Controlled Atmosphere" and other words of similar import when applied to fruits and vegetables.

Federal marketing agreements and marketing programs are in effect for almonds, filberts and walnuts. Adopted by producers, they have tended to stabilize prices.

Bulk handling has extended even to the frozen fruit and vegetable lines. Rough containers are built of lumber about 3 x 3 x 4 feet and are lined with heavy Kraft board and polyethylene sheets. These large containers full of frozen products are then moved by forklift truck just as are pallets.

The farmer's share of the retail food dollar has dropped steadily from 53 cents in 1945 to 39 cents in 1957. The spread is now 61 cents as the marketing margin and 39 cents as the farmer's share, which is a greater spread than at any time since 1939.

Seabrook Farms of New Jersey have been experimenting with the disposal of waste water from their vegetable processing operation by spraying the water into nearby forest areas, which may lead to better use of waste water and may also tend to reduce stream pollution.

—H. B. T.

Coming Next Month

- Irving Krick's Spring Frost Forecast
- Three Crop Losses—in 75 Years!
- New Pear Varieties
- A New Grass and Poison Ivy Killer
- Spray Thinning Peaches
- How to Raise Sugar Content of Grapes
- Frost Control in Berries—Mulched Versus Unmulched Fields



Chevrolet Nomad—4-door 6-passenger

NEW WAGONS WITH WONDERFUL WAYS— THESE NEW '58 CHEVROLETS!

There's new lilt in the way they look. New verve in their way with roads and loads. And you have five to choose from. Pick a two-door model or four, six-passenger or nine, you can be sure of this: You'll move in the smartest station wagon set there is!

You never had handsomer reasons to move into a new wagon. These 1958 Chevrolets are dramatically lower and wider—nine crisp inches longer.

Note that the larger liftgate curves clear around at the corners. It's hinged into the roof and raises completely out of the way for easier loading.

Chevrolet's new standard Full Coil suspension puts an extra-soft cushioning of deep coil springs at every

wheel. Or, as optional choice at extra cost, you can have the ultimate of a real air ride—Level Air suspension. Bumps get swallowed up in cushions of air. And your wagon automatically keeps its normal level, regardless of how heavy the load.

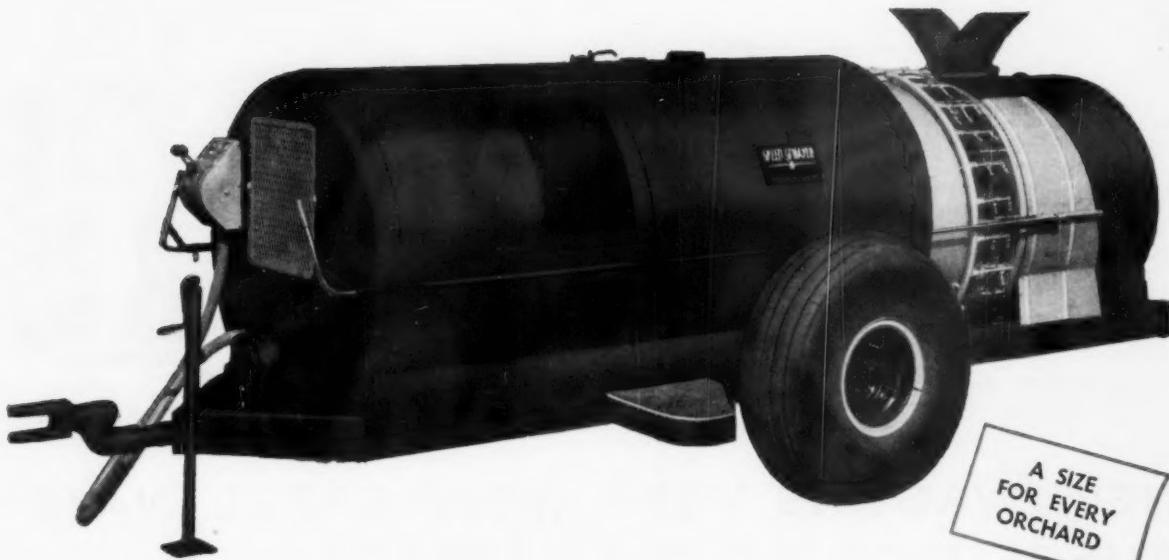
There's still more to like. More steam in Chevy's budget-minded Blue-Flame 6. More really potent performance with the new 250-h.p.

Turbo-Thrust V8,* an ideal running mate for honey-smooth Turboglide* drive. Better see your Chevrolet dealer. . . . Chevrolet Division of General Motors, Detroit 2, Michigan.

*Optional at extra cost.



Chevrolet Brookwood—4-door 6-passenger



A SIZE
FOR EVERY
ORCHARD

New spraying efficiency, plus positive spray pattern control with John BEAN **SPEED SPRAYERS for 1958**

Now — the complete John Bean Speed Sprayer line brings you new advancements, new improvements for more effective orchard and grove spraying than ever before. More powerful engines provide greater power reserve; exclusive air handling design gives higher air volume for top spraying efficiency; better fuel economy delivers more cubic feet of air per horsepower consumed; larger tanks save time with fewer refilling stops.

SEE the complete Speed Sprayer line at your John Bean dealer. Ask him to demonstrate the model that is exactly suited to your grove or orchard.

Write today for your FREE illustrated copies of: "What You Should Know About AIR-CARRIER SPRAYING OF ORCHARDS" and the new 1958 Orchard and Grove Catalog.



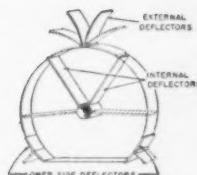
THE COMPLETE ORCHARD SPRAYER LINE



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Division of Food Machinery and Chemical Corporation



YOU CHANGE SPRAY PATTERNS QUICKLY, EASILY

Fast, simple adjustments of internal deflectors mounted in the discharge section direct air flow where you want it. The upper deflectors provide positive coverage of tall trees — the lower deflectors give you the bottom drive needed for uniform penetration to all portions of trees.



Tall, mature trees with overhanging branches are no problem. Quick adjustments of upper internal deflectors guide the air flow to provide a penetrating spray pattern that assures complete top to bottom tree coverage.



For efficient, thorough spraying of young trees, adjust lower internal deflectors for uniform, overall penetration and even distribution with savings of spray material.